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Method of Regulating the Speed of Wind Wheels.

The power of the wind being free for all to use as much or little as required, the next requirement is to collect and transmit the largest amount of power in the most economical manner. The machine for this purpose should be simple, strong, durable, and moderate in cost, qualifications the inventor is certain this mill possesses. It is constructed on true scientific and mechanical principles, and has no delicate or fragile parts liable to be broken or deranged. The speed of the mill is controlled very effectually by the governor in consequence of its direct and absolute connection with the fans.

Fig. 1 is a perspective view of the model, the construction of the frame of which may be varied to suit circumstances. Fig. 2 is an enlarged view of the hub or spider of the wheel, showing the manner of connecting the fan shafts with the regulating power. The shaft of the wheel is hollow from end to end, and is mounted in boxes fixed on an annular plate which is free to turn in either direction by means of grooved rollers traversing a circular rail on the annular framing, A, at the top of the supporting frame. The annular plate is held in position by means of overlapping clamps or guides, B. The vane, C, can thus rotate the plate and its appurtenances so as always to present the fans to the wind.

The horizontal shaft carries a flange or spider, D, which is the hub of the wind wheel. On this are mounted the fans, the shafts, E, of which turn in boxes, F. These are plainly seen in Fig. 2. The inner ends of these shafts carry pinions or segments of pinions, G, the teeth of which mesh into a four-sided rack, H. This rack is attached to a shaft or rod sliding within the horizontal wheel-shaft, which, as before stated, is hollow. Now it will be seen that if the rack is thrown either outward or inward it will, by means of its teeth engaging with those of the pinions on the fan shafts, partly rotate the fans and present their edges at a greater or less angle to the direction of the wind.

It remains to be seen how this simple device for feathering the fans is made self-regulating. The regulator is attached to an upright shaft, I, which is hollow and has a rod running through it which connects in the usual way so as to be operated by the horizontal movement of the balls. At the top the rod connects with and operates a bell-crank lever, the forks of which move a sliding sleeve, J, on the horizontal shaft. This sleeve, by means of pins pressing through the internal shaft and working in slots in the outer shaft, can communicate a reciprocating movement to the four-sided rack and consequently change the position of the fans. The regulator is driven by means of bevel gears, which connect the horizontal and upright shafts. The lever, K, under the regulator, is used to stop the mill, which is done by depressing the hand end of the lever, thus elevating the balls and presenting the fans edge to the wind. A catch holds the lever in place when depressed. Power can be transmitted from the upright shaft which drives the governor, either through the medium of bevel gears or pulleys and belts.

Fig. 1

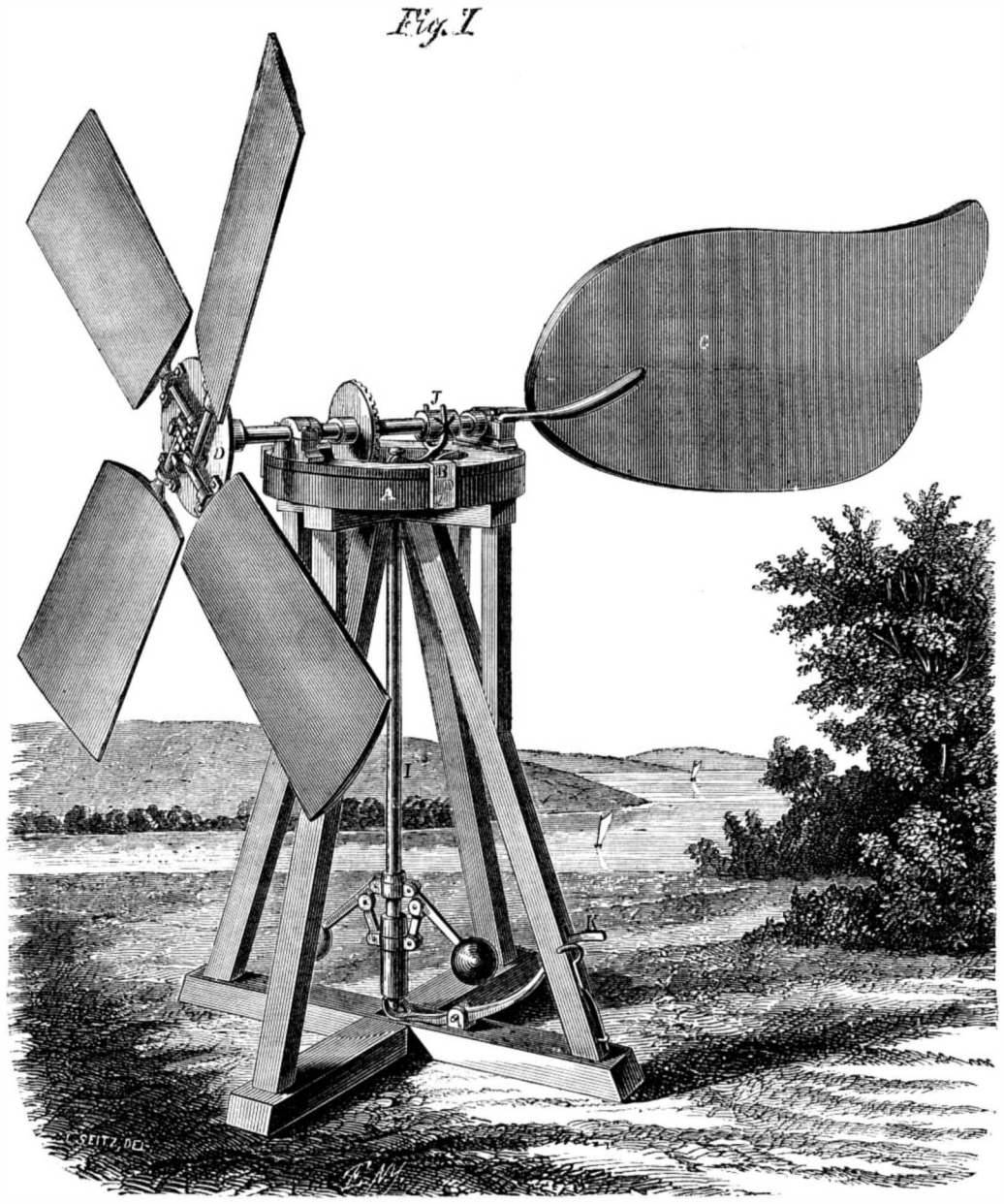
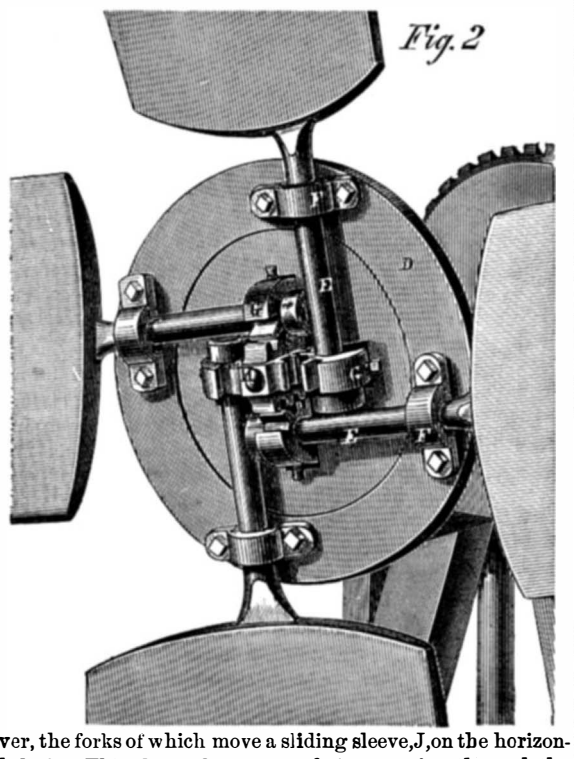


Fig. 2



TRULL'S PATENT EXCELSIOR WIND MILL.

The operation of the governor can be readily comprehended from the foregoing description. As the velocity of the governor increases, the balls fly from the center, operating the connections with the fans and presenting their surfaces at a more and more acute angle to the force of the wind, which will consequently reduce the speed of the mill. Of course, under opposite circumstances the action and result are reversed. The patent for this invention, issued to Nehemiah Trull, of Shaker Village, N. H., October 4, 1864, has been in force nearly three years, and a number of the mills are now in use, giving good satisfaction. Those interested should address D. Arthur Brown & Co., the manufacturers, at Fisherville, N. H.

Mystery of the Great Pyramids.

For several thousand years the object for which the "Great Pyramid" was constructed was a mystery to the whole world, and many of the most learned savans have exhausted surmise and speculation in their fruitless efforts to solve the riddle. A few years ago a gentleman in London, a Mr. Thomas Taylor, conceived the idea that the structure was inspired by Divine Providence to afford the Egyptians a standard for their weights and measures. This theory found but few proselytes among scientific men in Europe, but fanciful and far-fetched as it is, it has recently found an advocate on this side of the water, in the person of Professor Eaton, of New York, who read an elaborate essay on the subject the other day before the University Convocation at Albany. In support of this view he said that the pyramid was perfectly symmetrical, with five sides and five angles. It was originally 762 feet on each side, and is now the highest and largest building erected by man. Sir Isaac Newton had devoted his time and labor in analyzing the ancient cubit, and came to the conclusion that it was 25 inches, and a little more. The circle which forms the correlative to the pyramid consists of 365¼ of these cubits, thus corresponding to the year. The pyramid was made plane to the meridian, without hieroglyphics or secret inscriptions, as all burial places of antiquity did have which are found everywhere else. The box which was found in the center of the body has been commonly supposed to be a sarcophagus, but there is no appearance to bear this theory out. No procession of priests could enter, and it is indeed difficult for any one. The granite of which a portion of the pyramid is made is not found near at hand, and indeed not closer than Mount Sinai. The structure seems to be built on the most correct principles of geometry. It concludes in pointing with the North Star, or that star which, in the precession of the equinoxes, four thousand years ago was the North Star. Professor Eaton then proceeded to show that the temperature of the central room was uniform through out, thus affording a place for keeping weights and measures; that the box affords an exact liquid measure; that water was found in the pyramid itself, thus giving pure material for careful examination; that the opening in the pyramid looked out on the lower culmination of the North Star at the time of its erection, and not on the upper, because the Pleiades would interfere with this view; and that it is on the exact spot for the purposes of taking astronomical observations.—*Journal of Commerce.*

The Tea Plant in South Carolina.

A recent visit to Alfred L. Acee, M. D., near Bellevue, Talbot Co., Ga., enables us to record some facts in relation to the tea plant, which may be new, interesting, and perhaps instructive to our readers. The seeds were sent seven or eight years ago, by Senator Alfred Iverson to Dr. Acee. They were imported from China to the Patent Office of the United States. Dr Acee placed them in a box prepared with virgin soil or chip manure until they germinated and then transplanted them as they sprouted to his garden of select fruit trees and vineyard. They there, to the number of forty shrubs, are now flourishing in everlasting green, and full of vitality notwithstanding their exposure to Summer's heat and Winter's cold, the storm and the sunshine. The shrubs are now about seven feet high. The folliage is very dense, and what is singular, if not peculiar, the shrub seems to improve and grow more green by striping its leaves. It presents at the same time bare twigs and tender and full-grown leaves. The seeds in size and color resemble a hazlenut, and three are contained in each capsule. The flower is white and scentless—*Columbia, S. C., Phoenix.*

KEROSENE LAMP EXPLOSION.—Recently, as Mr. Nathan Todd and wife, of Rowley, Mass., were retiring, the latter attempted to blow out the light, which immediately communicated with the kerosene, causing an explosion. Mrs. T. was in her night dress, which took fire, burning her severely. Mr. T. at length smothered the flames and extinguished the fire, but not until he as well as his wife was badly injured. The accident arose from blowing the flame down into the lamp. —*Newburyport Herald.*

Blowing down the chimney is a very poor way of extinguishing a lamp. It requires a good degree of dexterity and a considerable amount of breath. It should never be resorted to except the object be to blow up the lamp. The easiest way of extinguishing a lamp happens to be the safest; turn the wick down pretty low and give a slight puff at the bottom of the chimney.

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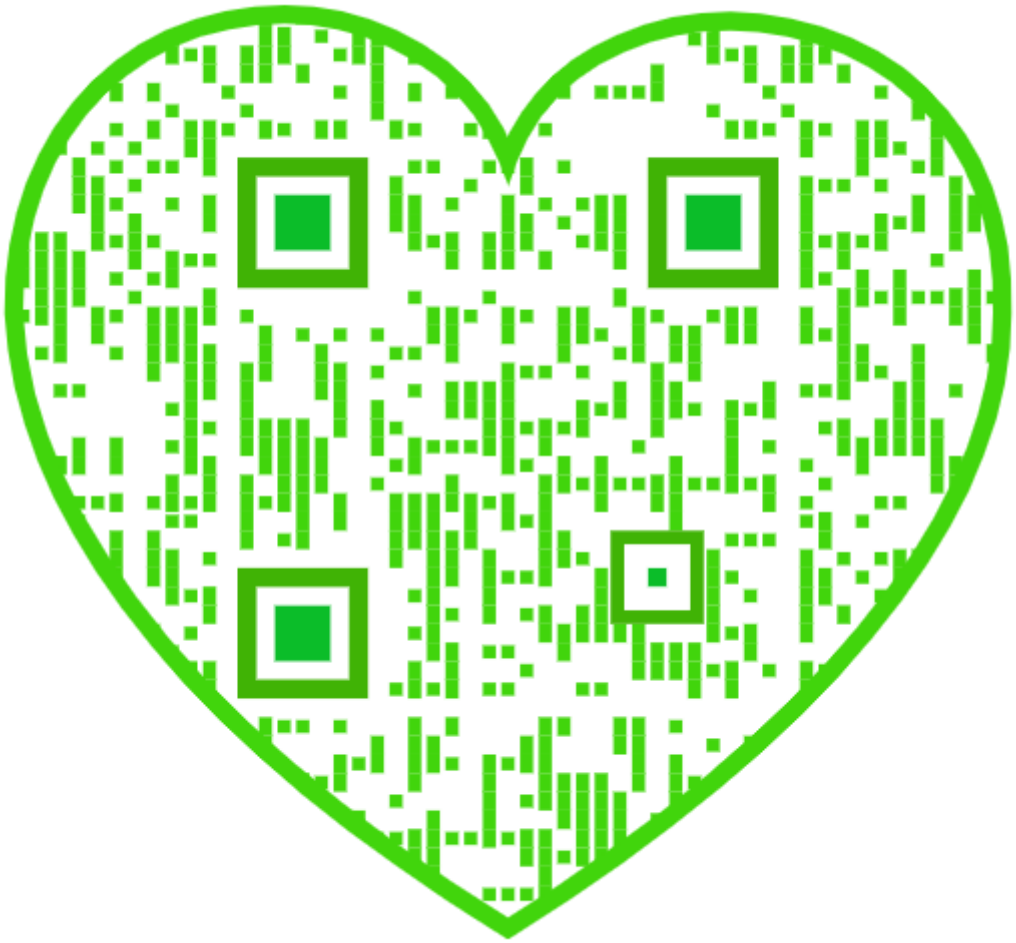

THE GEYSERS OF CALIFORNIA.

The Geysers of California are situated in lateral ravines of Pluton River, a tributary of Russian River. In gaining a clear idea of the California Geysers, it will be necessary to forget the geysers of Iceland, with their columns of water and capitals of cloud. Upon approaching those upon Pluton River, your first impression is that there has been a great conflagration, and that the fire engines are blowing off steam preparatory to going home. The gorge is lined with masses of smouldering ashes, from which hot steam is being drifted, by the wind, and, in some places, you can imagine that the embers are ready to relight. In the bottom of the cañon, turbid and blackened water, from which vapor slowly lifts, is running among the discolored rocks. Here and there, escaping steam hisses, and, in some places, roars like the "exhaust" of an engine.

In other smaller cañons and depressions on an irregular table land, there are like appearances of chemical activity. The rocks in the vicinity are mainly sandstones and silicious slates, which are highly metamorphic. The intermediate varieties are innumerable, all belonging to the Cretaceous Series, which is largely represented in the northern Coast Range of the State. Two belts of eruptive rock have been observed in this part of the State, one lying thirty miles south, and the other found between the Geysers and Borax Lake, twenty or more miles away. Both are on the line of former volcanic activity, and near both we find many thermal springs.

Beside hot springs, incrustations of sublimed sulphur, pumice, and the light lavas are regarded as traces of volcanic action. These are found in many places in California, and in Nevada. The writer has observed these indications near the summit of the extinct volcano, Shasta. In all cases they point to former igneous activity. Therefore, the steam springs and the Solfataras may be considered, for all practical purposes, as the poor relations of volcanoes in reduced circumstances. Such are the Geysers.

Upon the 28th of May, 1866, there had been a slight fall of rain. The morning of the 30th was quite cloudy, the thermometer ranging at eight o'clock from 60° to 62° Fah. The temperature of the water in Pluton River, immediately above the confluence of the stream from the Devil's Cañon varied from 65° to 70°. At the mouth of the cañon the temperature of the water was 90°, and upon walking up the bank of the stream the different temperatures of 95°, 97°, and 100°, were noticed. A light vapor was rising from the surface of the water.

The first spring where ebullition was observed had a temperature of 135°. There was a free escape of sulphydric acid from the cloudy water, and here the hot, stifling moisture began to make the walk one of discomfort. Upon the right hand several small springs of 190°, all giving off sulphydric acid, were boiling violently, and at the edge of a queer miniature cave on the same side, there was a furious little cauldron seething at 200°. Several of the springs had low forms of cryptogamic vegetation growing upon the walls of the basins, and, in some instances, confervæ were observed thriving in water of a temperature of 145° Fah. Seventy or eighty rods from the mouth of the canon, there is a jet of escaping steam, and a little further on there is an escape pipe, nearly ten inches in diameter, through which steam is forced out several feet. Part of the steam condenses at five feet from the orifice, the rest ascends as light vapor, and is borne away by the wind. The greatest degree of temperature observed was 206° Fah., where there was, of course, as in the other cases mentioned, apparent ebullition from escape of gases. In no instance was the temperature of 500° noticed, which Mr. Bowles speaks of in his entertaining "Across the Continent." Obviously, this is a slip of a flying quill.

Upon the east and west sides of the cañon, at this point, the ground is made up of decomposing rocks of clayey consistence, and of various colors dependent upon metallic oxides; each little locality seeming to be a laboratory for the decomposition of silicates. Wherever the light soil was dry, there was no vegetation whatever; wherever there was a good degree of humidity, confervoid growths were scattered. Near springs, a few rods further east, a species of grass, Panicum, was seen growing; and, in one instance, at the water's edge where the panicle was bathed in slowly-rising vapor. This species is abundant near fumaroles, which are little natural blast chimneys, lined with crystalline needles of sublimed sulphur.

This leads next to the the subject of incrustations, which for our purpose we may divide into three groups, namely: silicic acid, sulphates, and sulphur. The first comprises the crystals of quartz, which are found upon slates embedded in the soil. They are minute, but very perfect.

The sulphates, such as crystals of ferric and magnetic sulphate, and the alums were not seen in their best estate. The rain of May 28th had dissolved the largest ones, and while we regretted this loss, we consoled ourselves with the thought that the rain, which had robbed us of our jewels, had added intensity to the chemical action going on around and below. It is stated upon good authority that the action is more intense during, or at the close of the rainy season, which is the winter of California.

The sublimed sulphur presents the two prevailing forms; namely, that which has crystallized with free access of air, and resembles the obtuse oblique rhombic prisms of sulphur familiar to chemists; and that which is produced under pressure, and has a slight inclination of the vertical axis.

In some limited localities there are effloresced salts, and pale, faded carbonates. At one spot, a light green cupric carbonate was partially covered with a darker green confervoid growth, and each shaded into the other like colors on a palette.

But the salts just referrrd to are those which have been left by the heavily-charged water. Imagine, therefore, the variety of dissolved salts which must have been formed, by the over-heated steam and sulphur acids, from the rocks which are being so rapidly leached under pressure. The solutions are, almost in every case, acidulated by a high sulphur acid; free sulphur floats in the water, and sulphydric acid escapes with violent ebullition. It must be supposed that in these acidulated solutions, the iron exists as a ferrous salt, since sulphydric acid has this reducing power.

In one spring, which is very nearly neutral, the iron has been incompletely precipitated and is suspended, in the agitated water, with other insoluble sulphides. Another spring is strongly acidulated, and contains only the merest trace of the sulphydric acid, which everywhere fills the atmosphere. The rationale of the reactions observed at the Geysers is not obscure, but so far as the writer is aware, no careful analysis of the waters and sinter have been made upon the spot.—*American Naturalist.*

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

About Gravitation.

MESSRS. EDITORS:—In your "Gleanings from the Polytechnic Association," of the meeting of the 11th of April last, published in the SCIENTIFIC AMERICAN, you give a synopsis of Mr. Malling's paper on "Molecular Motion," in which you say, "Gravitation is considered to be the resultant of equal infinite and opposite forces intercepted by matter, thereby causing a diminution of the two opposing forces between the atoms, and a preponderence of the external force, thereby impelling the atoms towards each other."

This mechanical explanation of gravity, which Newton considered as simply a property of matter impressed upon it by the Divine Creator, if I rightly understand it, I find first advanced by Prof. Bassnett, thirteen years ago, in his "Mechanical Theory of Storms," True, he advances his theory of gravity as only incidental to his main subject, yet he clearly announces the proposition that gravity is a physical effect produced by one body of matter upon another, through a physical medium, which he supposes to be the ether of the Plenists, which he assumes to possess inertia and elasticity; but if it fills all space, must be without ponderosity, in which waves are created by atomic motion, producing a propelling effect, a portion of which being neutralized by opposing waves from an opposite body of matter, the two bodies of matter are forced towards each other. On page 23 he says: "We will next endeavor to prove that the gravity of planetary matter could not exist without this ethereal medium, by showing that it is the effect produced by the interference of *opposing waves*, whereby a body is prevented from radiating into space its own atomic motion from the side opposite which another body is placed, as much as on the opposite side, and consequently it is propelled by its own motion towards the other body; and this effect, following the simple law of inertia and radiation, is direct as the mass and inverse as the squares of the distances."

Again, on page 155, he says: "If action be equal to reaction and all nature be virbrating with motion, these motions must necessarily interfere and some effect should be produced. A body radiating its motion on every side into a physical medium, produces waves. These waves are a mechanical effect, and a body parts with some of its motion in producing them; but should another body be placed in juxtaposition, having the same motion, the opposing waves neutralize each other and the bodies lose no motion from their contiguous sides, and therefore the reaction from the opposite sides acts as a propelling power and the bodies approach or tend to approach each other." Am I correct in understanding Mr. Walling as reproducing Bassnett's mechanical theory of gravity? Is this theory original with Prof. Bassnett, or by whom was it previously advanced? J. D. CATON.

Ottawa, Ill.

The Comets Again.

MESSRS. EDITORS;—I notice in your paper of the 7th inst., a communication advancing the theory that the tails of comets are composed of *refracted light.*

Now it seems to me that your correspondent must be somewhat in the dark, both as to the nature of light, and the observed phenomena of comets.

According to his theory, there could be but one tail to a comet, which must necessarily be of a conical form, extending in a perfectly straight line in a direction diametrically opposite to the sun, in *every instance.* Now let us see how this corresponds with observed phenomena.

Very few comets of large size have been attended by straight tails; that of 1744, which appeared on the 7th or 8th of March, had *six* tails, from 30° to 44° in length, curved nearly in a quadrant; in the appearance of Halley's comet in 1835, the tail had a strong curvature; and the magnificent comet of Donati, in the autumn of 1858, is probably within the memory of most of the readers of the SCIENTIFIC AMERICAN; it is this comet which furnishes my principal refutation of Mr. Wilhelm's theory.

I have open before me a monogram upon this comet, by Prof. George P. Bond, of Cambridge, published by A. Williams & Co., of Boston, in 1858; on the 25th page is a cut, which, as I can attest, is a faithful representation of the comet, on the evening of October 10th, of that year; the tail springs up from the nucleus in a sharp and regular curve, for nearly half its length; the rest drifts away to the northward in nearly a straight line, upon looking at which, it is impossible, to me at least, to resist the conviction that it is composed of nebulous matter, as evidently left behind by the motion of its head, as the smoke of a locomotive by the progress of the train.

It is unnecessary to mention further instances, though I could bring up a number, all tending to the same end—that is, to prove that the commonly received theory concerning these appearances is as yet the nearest approximation to the the truth. P. S. YENDELL.

Dorchester, Mass., Sept. 1867.

Coal Oil for Fuel.

MESSRS. EDITORS:—It appears to me that Col. Foot, Spencer, and other inventors, in their experiments with petroleum as a steam fuel, have overlooked or are not well posted in one of the best and cheapest oils for that purpose, namely, coal or rather shale oil. In number nine, present volume, of the SCIENTIFIC AMERICAN, you state that petroleum heat costs six times more than coal heat at present prices. We have no assurance that petroleum will long remain at its present low price. Now what I wish to say is, that coal or shale oil, free from all impurities, and from eighteen to twenty degrees Baumé, can be produced here in any quantity for fifteen cents or less per gallon in bulk. This I will prove by the following: Three years ago, I put up a number of the improved revolving retorts in Beaver county, Pennsylvania, for the purpose of manufacturing lamp oil, and completed them in time to find petroleum, too low in price and too light in gravity for this heavy oil to compete with for lamp purposes.

In working these retorts, we charged each one with seventy-five bushels or three tuns of coal six times in twenty-four hours, receiving from twenty-five to twenty-seven barrels from each retort, or about sixty gallons of oil from a tun of coal. The expenses, mining the coal, eighty cents per tun, or say, for fuel, breaking the coal, etc., $7; eighteen tuns per retort, $18; average labor for each retort, $4,50. Now we have running expenses for each retort, $22,50 per day, for which we receive twenty-five barrels of oil, less than $1 per barrel. The freight to Philadelphia or this city is from sixty to sixty-four cents per hundred, or about $2 a barrel, which will bring the oil here about 7½ cents per gallon. Of course this is without barrel, or there will be five cents added for packing.

This shale oil, in my opinion, is the only rival coal has for our Atlantic steamers. The difference of gravity between shale oil and petroleum is so great—one at twenty, and the other forty-five—shows you at once the superiority of shale over petroleum for fuel purposes. My experience has taught me that shale oil has nearly double the intensity of heat that petroleum has at forty-five gravity. C. G. W.

New York.

An Iron Worker on Tweers.

MESSRS. EDITORS:—Our works are supplied with water taken directly from a spring flowing from magnesian limestone beds. The water is very hard, in other words thoroughly saturated with carbonate of lime in solution with, no doubt, a slight percentage of sulphate of lime. The tweers we have always used until about 18 months ago, were made either of coiled gas pipe in cast iron, or of cast iron alone, but hollow, each intended to admit a constant stream of water through it to preserve the metal of the tweer from burning. When in place in the furnace their longest duration was from 4 to 6 weeks, not unfrequently burning out in as many days.

Having heard that copper tweers had been used formerly in Europe, although now generally abandoned in favor of iron tweers, I undertook to test their efficacy. The result of the trial surpassed my most sanguine expectations. Two of them were in active use 10 or 12 months, supplied with the same hard spring water, before either of them showed any evidence of leaking from the effects of burning, and during that time no attempt was made to wash out or otherwise remove the scale. When removed, the scale proved to be about the thickness of an egg shell, compact, yellowish, and amorphous, with smooth fracture, and with little or no free sediment and no light, porous, calcareous incrustation or lumps as found in our heater and boilers.

I have sent this communication in the hope that the facts stated may prove to be of some value to furnacemen who alone can appreciate, as the result of costly experience, the loss of time and material and the damage to hearths arising from the sudden admission of water in the crucible.

E. H.

Irondale, Mo.

Pumping Hot Water.

MESSRS. EDITORS:—I have charge of a factory wherein are 1,200 feet of pipe used for heating the building in the winter. The condensed water from this piping is considerable and all flows through a steam trap into a tank set in the ground; this condensed water is nearly boiling hot. We pump this water back into the boiler again. With due deference to your opinion I must say that any ordinary pump will not do it. The effect is a pounding sound in the valve chamber, chattering of the valves as though they were very unwilling to leave their seats, trembling of the pump rod, etc. (This establishment is new). After the steam fitters had got through with their work and steam put on for the first time the result was as I have stated. I thought the trouble was in the pump, but soon satisfied myself it was not; the pump would not supply the boiler; I could not keep the water cool, and could use no other. "Necessity is the mother of invention."

I picked up a book the other day with an article in it headed "Getting Under Way," and one of many reasons given why the pump would not work was this: "The check valve may get stuck and not drop on its seat, letting the hot water flow back to the pump and hot vapor form in the valve cham-

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ber, thus preventing the valves from working." I can pump it now boiling hot without any trouble.

I think, Messrs. Editors, if you invite the attention of your correspondents to this subject you will find I am right. Some may have had experience like mine; if so I can sympathise with them, for to have a whole establishment depending on you, and a tubular boiler driven to its utmost, and then be bothered for water is not a very desirable situation.

Hingham, Mass. JOHN C. GARDNER.

[Our correspondent states that he can pump hot water with the ordinary force pump, but he fails to state how he does it. From our experience we feel assured that to pump hot water the pump should be—in some way—different from one intended to pump cold water.

In starting a new engine and boiler nothing is more important than an inspection of the feeding pump. Some manufacturers are reprehensibly careless in building their pumps. The writer once started a new establishment in Nova Scotia, and after firing up, attempted to feed the boiler, but the pump refused to work. After an hour of great anxiety and labor we found one of the composition valve seats had not been put fairly into place. It stood about one-sixteenth of an inch above the hole for its reception in the casting. The consequence was that the water, backing from the boiler, went under the flange of the valve and held it up from its seat. Except for this the pump was well constructed, and after the seat was driven home no more trouble was experienced.—EDS.

Artificial Stone--Its Local Value.

MESSRS. EDITORS:—I see on page 1 No. 4 Vol. XVII., dated July, an article on artificial stone, invented by a Mr. Ransome, of England. We would like to have all the information you can give us. We have concrete machines, but they do not give satisfaction. The chemical combination is too slow, and not sufficiently adhesive. We want something better, something that will not crumble down by rain and frost. If what you say about Ransome's blocks being so hard and solid is true it is the very thing we need out on the prairies for houses, barns, walls, and fences. Can you inform us what the expense per inch or foot of this material will be for manufacturing it? We have sand, gravel, lime, gypsum, salt, and soda. Now if we only knew how to mix them chemically it would be a favor of untold magnitude. We prize the SCIENTIFIC AMERICAN and expect it to assist us in overcoming the difficulties we meet with in the scarcity of timber. We have the most beautiful, most fertile, and healthful country in the world; but the consumption of the immense coating of grasses has almost eradicated our timber. We being a fast people cannot wait till it is planted and grown. We have the material here for the stone. Now we want you to find out, and tell us all about the manufacture, definite proportions, and machinery necessary to manufacture the stone. L. McCURDY.

Carrolton, Iowa.

[Those who are practically acquainted with the manufacture of artificial stone, are advised to turn their attention Westward. Here at the East we have an abundance of natural building material with which artificial stone is not likely to compete.—EDS.

The Crystallization of Honey.

MESSRS EDITORS.—I have several times seen it stated in the SCIENTIFIC AMERICAN and elsewhere, that the crystallization of honey is caused by the action of light. In opposition to this theory, allow me to present two facts. We frequently take up honey late in the season (in Nov. and Dec.) place it in tin pans and set them on shelves in the cellar. Some of the honey, of course, leaks out of the cells and in a few weeks will be found crystallized in the bottom of the pans. Yet no light enters the cellar from the time we bank the house in October until some time in March.

Again, our strained honey we put in earthern jars, and after replacing the covers, set them in a dark closet where no light enters. In the spring the honey that remains unsold or unused, will be found completely "candied." In my opinion exposure to the air, and cold have more to do with the crystallization of honey than light. J. L. W.

That Big Saw.

MESSRS. EDITORS:—In a recent article on the Emerson saw you state that the saw was capable of sawing 50,000 ft. of inch lumber in 10 hours with 50 horse power or in other words it only requires one horse power to saw 1,000 ft. of lumber in 10 hours.

This assertion of Emerson's that with his saw, "it only requires to saw 1,000 ft. of lumber (inch) in 10 hours, one horse power" has done me a good deal of damage because with my experience I find it to be impossible.

Another assertion of Emerson's is "that it only requires 15 horse power to drive a 52 inch circular saw of his make as strong as it could be driven, and that it would at least cut 10,000 feet of inch lumber in 10 hours."

Now I would feel obliged if you would give me your opinion as to the feasibility of the foregoing and also how much power it requires to cut 10,000 feet of lumber per day with a 52 inch circular saw, as I would like to know whether the result of all my experience has left me in the wrong.

LAMAR FOOS.

New Haven, Conn., Sept. 6, 1867.

[Before we comment on the above perhaps Mr. Emerson and the correspondents will express their views on the subject.—EDS.

Rapid Disintegration of Granite.

MESSRS. EDITORS:—A few weeks since, as I was going from Bucksport to Ellsworth, Me. some five or six miles beyond Bucksport I noticed large boulders crumbling to pieces. These boulders looked like coarse granite and varied in size from a cubic yard to fifty in dimension; they are in all stages of disintegration, some just commenced, some nearly, and others wholly disintegrated and changed to coarse gravel, which is used in some places to macadamize the roads. So far as my observation extended this disintegration was confined to a space of about two miles. I found that it was a fact well known for twenty miles around. I have been in many different countries but have never seen anything like it and it has interested me much. JAMES EMERSON.

Lowell, Mass.

Translated for the Scientific American.

Shooting Trial of the Army Target School at Spandau, Prussia.

On the morning of the 6th of July a trial of skill in musketry was witnessed by the Crown Princes of Prussia and Italy, at the target grounds of the Army-Target-practice School, and was arranged in the following manner: At the commencement five men fired five shots each at a moving target (figure of a man) at a distance of 130 paces with the following result: 25 shots, 18 hits; average hits, 72 per cent.

After this, five men fired five shots each, lying down, at some moving targets (men's heads); distance 200 paces; result: 25 shots, 18 hits, 72 per cent. A trial in quick-firing by various marksmen was then made with the Peabody and Martini rifle and the Prussian needle gun, during one minute, lying down; distance, 400 paces; result: Peabody 12 shots, 7 hits; Martini, 11 shots, 7 hits; needle gun, 11 shots, 9 hits. A fire at covered marks (5 targets posted at proper intervals behind an embankment 10 feet high) was then commenced. Thirty men were posted in squads of ten at the respective distances of 400, 600, and 750 paces from the embankment; ten men fired at the same time ten shots each, lying down, slow fire; result: 489 marks found in the five targets out of 300 shots. There was no sight or other guide whatever placed upon the edge of the embankment. A sort of sham fight was then executed by 96 men with 4 officers, upon the grand stand; distances not previously given. This company took position in a wood in bodies of 24 each. At the signal, "deploy as skirmishers" one squad deployed to the edge of the wood and, lying down, commenced firing at a number (32) of half-sized figure targets; distance 200 paces; result: 120 shots, 50 hits, 42 per cent. Two targets were then seen approaching, each representing the front of a section of infantry, which advanced a distance of from 300 to 200 paces towards the edge of the wood, when they were fired upon by 24 men during one minute, quick-firing; result: 188 shots, 157, hits, 84 per cent. The enemy then retreated, but suddenly another body of imaginary troops (single figure targets but only half visible, owing to the undulating ground,) appeared at a distance of about 200 paces, whereupon two of the squads (48 men) deployed as skirmishers, firing in common time and lying down; result: 275 shots, 134 hits, 49 per cent. The enemy disappeared, when, bringing up his reserves, he suddenly displayed two targets each representing the front of half a platoon, but two squads of 24 men fired each three volleys at 300 paces distance, which caused him to retreat; result: 138 shots, 103 hits, 75 per cent.

A number of the enemy's skirmishers under cover (32 single figure targets) now became visible a little further back, when one of the squads (24 men), after having deployed as skirmishers opened fire upon them, lying down, distance 170 paces; result: 117 shots, 55 hits, 47 per cent. At the same time 10 officers, 5 on each wing of the line of skirmishers, fired the same distance at a target which was moved rapidly backward and forward (representing a man on horseback riding at a brisk trot); result: 45 shots, 40 hits, 89 per cent. Cavalry suddenly appears (large cavalry target 96 feet long, 8 feet high), and is opposed by three squads (72 men) who give a volley at 300 paces; result: 70 shots, 56 hits, 80 per cent. But the cavalry continues to advance, which is demonstrated by suddenly drawing up the small cavalry target, 48 feet long, 8 feet high, at a distance of only 200 paces, when 72 men deliver two volleys upon them, which causes them to disappear, in place of which an infantry column of the enemy, 40 feet long, 6 feet high, shows itself at a distance of 300 paces. The 72 men discharge two volleys at it; result: 144 shots, 111 hits, 77 per cent. The whole company now advances upon the enemy's column in a general attack, which ends the fight. The trial was concluded by firing with ordinary cartridges at a barrel of powder, also with explosive cartridges at a wooden wall made of two sides of boards with straw packing. The powder barrel exploded at the first shot and the wall ignited after firing the second shot.

ASPHALT PAVEMENT IN PARIS.

Visitors to Paris are generally surprised at the appearance of the pavement of a great number of streets in the central parts of the town, and still more at the peculiar mode of making and repairing this asphalt pavement if they chance to see those operations carried out. The asphalt pavement was introduced in Paris in 1854, by M. Momberg, chief engineer, and M. Vandrey, engineer of the municipal service of the town of Paris. The first street paved in this manner was the Rue Bergère. The asphalt used for this purpose is a natural composition of pure carbonate of lime and of bitumen or mineral tar. It is found in abundant quantities at Seyssel (Ain) in France, and at Val-de-Travers, in the canton Neuchâtel, in Switzerland. In the first-named locality the layers of bituminous limestone are from four to seven yards deep, and of very uniform composition, containing about sixty-six per cent of bitumen and thirty-four per cent of carbonate of lime. The natural stone is crushed into powder by machinery, and afterward heated to a temperature of about 140° Cent. It then remains in the state of a dry, fine powder, somewhat similar in its consistency to molders' sand, and in this form it is employed in the streets. The roads to be paved are first covered with a layer of concrete made of gravel and cement, and this layer is carefully dried before the application of the asphalt cover. The asphalt powder is then reheated and spread over the surface of the concrete in an even layer of about four centimetres, or $1\frac{3}{5}$ inches, in thickness throughout. After this the powder is rammed and compressed by means of heated cast-iron rams worked by hand. This being done, a heated roller is passed over the surface. The roller weighs about four hundred weight, and is repeatedly traversed over each short length of pavement newly rammed in. Two larger rollers, one of sixteen hundred weight and one of about two tuns weight, are afterward employed for flattening down the surface of the whole. The pavement is finished and ready for use immediately after cooling, say two or three hours after the first roller has completed its work. The asphalt pavement has now had an extensive and complete trial, and its advantages are very numerous. There is neither dust nor mud produced by it, and its surface wears no more than one millimetre, or one-twenty-fifth of an inch in thickness per annum in streets having a lively traffic. At the beginning there is a compression caused by the weight of the vehicles rolling over the pavement, but the whole gets soon into a state of uniform density, and the street then remains in a perfect state for a long time, requiring very little repair. There is no noise whatever from the wheels of carriages in asphalt-paved streets, so that there is a certain danger caused by this to pedestrians from the want of warning of the approaching carriages. This, however, disappears by degrees, as the public become more and more acquainted with this kind of pavement. The tractive force required by the carriages passing over asphalted streets is very considerably reduced, and still more important is the reduction of the wear and tear of carriage wheels, springs, and axles, a reduction which is due to the absence of all concussion and vibration in the rolling of the carriage wheels over the smooth and uniform surface of the street.—*Engineering*.

Causes of Acute Bronchitis.

In our climate, both forms of the disease are very common. The essential feature of the disease consists in an inflammation of the bronchial tubes, and is commonly produced by cold and moisture, applied generally or locally, as by means of damp clothing, or exposure to a cold, moist, variable atmosphere, especially, after the body has been overheated by exercise or crowded rooms, or the inhalation of metallic dust or gases. Dr. Charles T. Jackson, the distinguished chemist of Boston, nearly lost his life on one occasion by an attack of acute bronchitis, caused by the sudden inhalation of chlorine gas. Ipecac, in powder, when inhaled by some individuals, will cause bronchitis. The dust of newly cut hay, and the pollen of the rag weed, in some persons will produce the same effect, also the flowering of roses, and the inhalation of dust, exhaled from the foliage of growing plants and trees. Hooping cough is no doubt a certain form of bronchitis, induced by a specific morbid poison directly on the bronchial mucous membrane.

A very severe form of bronchitis often accompanies some of the eruptive fevers, measles, scarlatina, and small-pox, constituting a most dangerous and sometimes fatal complication. In measles, the recession of eruption is frequently followed by a great increase in the bronchial disorder, which is announced by the great increase of cough, and sudden oppressive dyspnœa. From the suddenness of the production and disappearance of the latter symptoms, which is occasionally observed in the cases, it has been suggested, that it is possible they may be rather congestive, than inflammatory, although if the congestion continue, bronchitis is the final result.

There are also many chronic diseases which may be said to favor the developement of acute bronchitis, these are Bright's disease of the kidneys, and diseases of the heart and lungs. It often occurs during the progress of pulmonary tuberculosis, and sometimes proves very fatal to the patient.—*Med. & Surg. Rep.*

DISINFECTANTS.—Mr. Crookes, says the *Medical Times*, has shown that the favorite disinfectant, chloride of lime, is about the least efficient of any of those substances reputed to possess disinfectant qualities. Chlorine itself is very little better, for if used in large enough quantities it will in time destroy the virus, but as it acts by way of oxydation, and as living virus resists this longer than dead oxydizable matter, before the gas can attack a virus everything else that it can oxydize will be oxydized first. And if when pure, chlorine is so slow of acting, when adulterated with eighty per cent of lime, its value is proportionately less. In sulphurous and carbolic acid, on the other hand, there are substances absolutely destructive of every kind of living thing of low organization, such as cattle plague virus is supposed to be. These substances, besides destroying the virus, attack it at once, and arrest all putrefying tendency.

DEATH IN THE BOTTLE.—A singular explosion case is reported by the engineers of the Manchester Boiler Association. An earthenware bottle of about a quart capacity was used, when full of hot water, as a bed warmer. After filling it on a previous occasion, the cork was tied down with a waxed end. When the bottle was next brought into requisition, instead of being emptied of its cold water and refilled with hot, it was put, all tightly corked, into the oven of a kitchen range, to be heated up entire. In a short time a violent explosion took place, the bottle was burst, and pieces of the oven door were thrown into the room with such violence as to instantly kill one person, and seriously injure two others.

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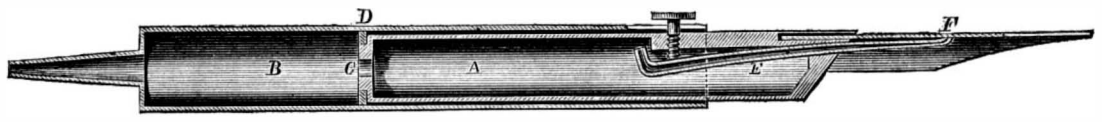
Improvement in Fountain Pens.

Much of the annoyance of the fountain pens which has prevented them from being generally adopted, has arisen from the difficulty of replenishing the fountain and of insuring a regular flow of ink to the pen nibs. The pen represented in the accompanying engraving is believed by the inventor to obviate these difficulties and to be as handy and convenient in use as the ordinary pen. The holder is double, like that of the common pen and pencil case, one part, A, sliding within the other, B. This latter is furnished at the top with a tapering pipe, which, when the case is to be filled, is placed in the ink, and the portion, A, worked up and down. This produces a vacuum or "suction," and the ink rushes up and through an opening, C, in the head or end of the inner case, A. This head is packed on its periphery, with a ring, D, of rubber or other suitable material to make it fit the interior of the outer case air tight. A bent tube, E, leads from the reservoir, A, to the pen, F, and conducts the ink to near the nibs. The flow is regulated by the thumb screw, by which the inner end of the tube, E, may be removed from or advanced to the inner surface of the pipe, A.



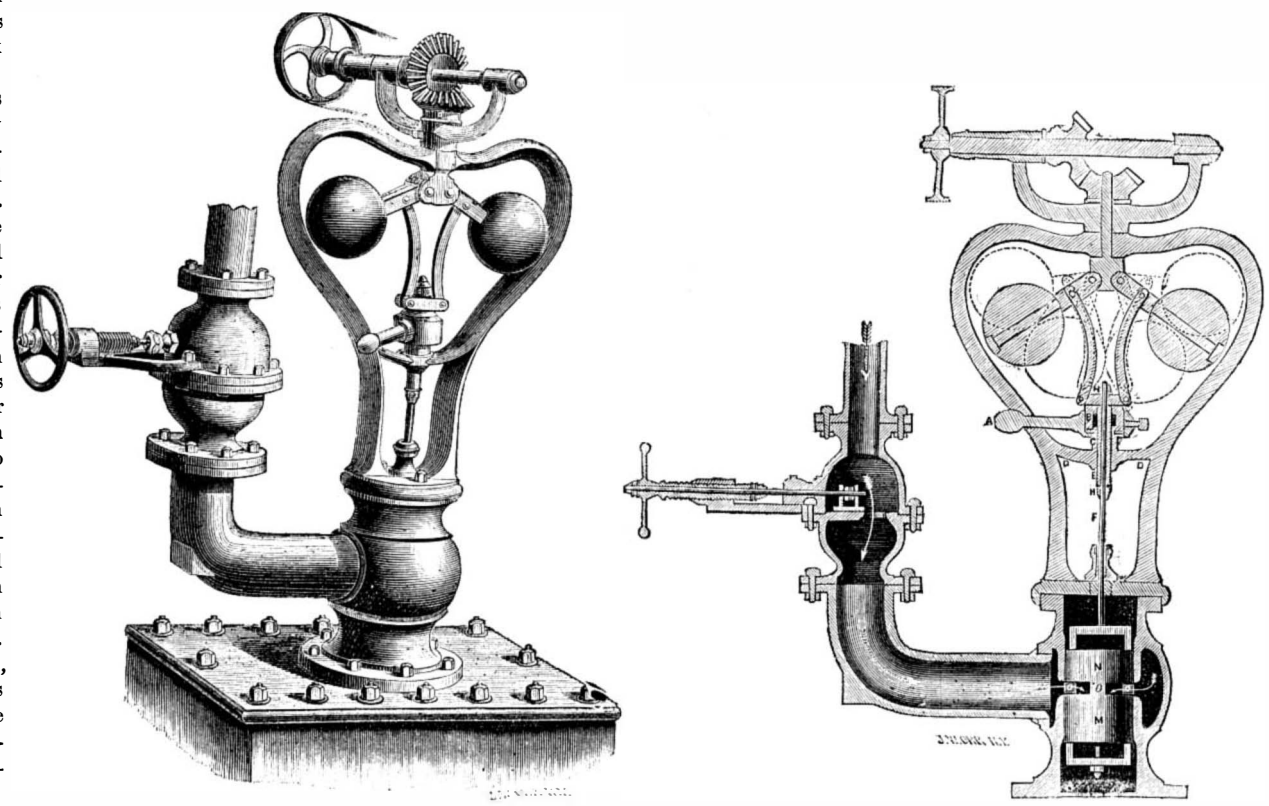
CHARLES' PATENT FOUNTAIN PEN.

Letters Patent, obtained through the Scientific American Patent Agency, were issued Aug. 13, 1867, to Jas. S. Charles, Box 245, Omaha, Nebraska, who will answer all inquiries relative to the improvement from those interested.

Improved Safety Governor and Valve.

The damage resulting from the breaking or slipping off of the governor belt of an engine, or when any accident disconnects the governor from the other machinery, is frequently great. It can be avoided only by some automatic or self-operating attachment to the governor which will instantly close the throttle or the inlet valve and stop the engine. This is effectually done by the governor represented in the engravings. It has had a seven years trial, and in all cases performed its allotted task satisfactorily.

One of the illustrations exhibits a perspective view of the governor and a portion of a steam chest, and the other a vertical section. By an examination of the latter the construction and operation of the governor can be plainly seen. A is a cam lever having a spiral groove, which works on a stationary pin and raises the balls of the governor from the position shown in the lower dotted lines to that they occupy in the engraving. It will be seen that this movement operates the valve, N, and permits the introduction of steam in the direction indicated by the arrows. When the engine is started, and up to speed, the balls rise, their governing range being between their position as shown and the upper dotted circles. When the balls fall to the point indicated by the lower dotted circles the safety valve closes the steam ports instantly and stops the engine. This can never occur except the balls be deprived of their rotary movement from accident or otherwise. The other parts of the governor are sufficiently well represented in the engravings to render particular reference to them unnecessary. It will be noticed that the vertical motion of the valve is very slight, so that the governor is very sensitive to the slightest change in speed. It proves to be admirably adapted to rolling mills, where engines are subject to frequent sudden strains and also in grist mills, effectually overcomming "back lash." The manufacturers have so much confidence in its superiority that they propose to send one or more to engine builders, and if, after thorough trial, they do not give entire satisfaction, to return the money and expense of freight.



SNOW'S COMBINED GOVERNOR AND VALVE.

It was patented Oct 11, 1859, and reissued May 13, 1862. Glen & Hall of Rochester, N. Y. are the sole manufacturers, and to them all letters desiring further information should be addressed. See their advertisement in another column.

A Tunnel Through a Volcano.

English engineers have nearly completed a railway tunnel through a volcanic range in New Zealand. The plains of the Canterbury settlement, in the southern of the two great islands of New Zealand, are divided from the port of Lyttleton by almost impracticable hills, and in May, 1861, the local government accepted an offer to complete a line of railway from Lyttleton to Christchurch in five years; the cost of a tunnel two thousand eight hundred and thirty-eight yards long, and called the Moorehouse Tunnel, being fixed at £195,000. The works were at first carried on under great disadvantages, on account of the Otago gold fever and other causes.

This tunnel affords, it is believed, the first instance where a complete section of an extinct volcano has been opened out. The rock in the tunnel is a series of lava streams and beds of tufa, intersected by vertical dykes of phonolite. The lava streams generally consist of scoria, overlying a coarse pink trachyte, which passes gradually through shades of gray, purple and blue into a black finely-grained dolorite, intensely hard and tough; the lightest and softest rock being at the top, and the densest and blackest at the bottom. Regarded from an engineering point of view, the work is considered eminently successful.

Wherever difficulties have been met they have been quickly and successfully overcome. A siphon six hundred yards long was employed for the drainage of the upper half of the tunnel. The system of ventilation has proved perfectly adapted to the requirements of the case, and has been not only effective but simple and comparatively inexpensive. The engineers of the Mont Cenis tunnel have found it necessary to adopt similar means of ventilation in that famous work. In the first instance air was driven in by fans worked by horse-power, but this soon proved quite insufficient; and when the works extended some distance, much time was lost owing to the difficulty of getting rid of the smoke. To obviate this on the Lyttleton side, the upper portion of the tunnel was partitioned off by a floor or brattice, about nine feet above rail level, forming a smoke flue connected with one of the shafts, at the bottom of which was placed a furnace, which, by rarefying the air, caused a steady current up the shaft, and drew the smoke away from the face of the workings.

A similar plan was adopted at the north end, the chimney of a forge being led into the shaft, and answering the purpose of a furnace, but the brattice was only continued for a short distance beyond the upcast shaft. On the Lyttelton side this system answered perfectly well, and the ventilation has continued good ever since; but on the Heathcote side where the work for the last quarter of a mile has been driven by a top heading (the temporary floor being left above the permanent rail-level for drainage purposes) the ventilation at the close of the work became sluggish, and recourse was had to driving air on the face by means of four fans driven by an eight-horse steam engine. This proved perfectly successful.

The system employed to secure the correctness of the alignment of the two ends of the tunnel was very simple. A permanent mark was fixed in the center line of the tunnel, on a tower built on the dividing range, nearly mid-way between the two ends. A transit instrument being placed on the meridian of the tunnel, as well as of the tower on the hill, it could be seen at once whether the flame of a candle in the center line of the work inside the tunnel was in a vertical plane with the mark on the tower. But it was also desirable in case of error, to have the means not only of correcting, but of calculating the amount of such error, and this could be readily done. The permanent mark on the central tower consisted of a batten six inches wide, with a black stripe one inch wide down the center. The eye-piece of the transit instrument being furnished with five vertical wires placed at equal distances apart, the value of the space between any two wires at a distance equal to that of the mark on the tower could be ascertained by reference to the width of the batten, which thus gave a scale by which the error in the position of a light placed in the tunnel under the tower could be rated with great exactness. It has been by this means that the alignment has been tested from time to time and the proof of the correctness of the system has been established by the present result.

In spite of the peculiarity of the work, the health of the men has been generally very good. Accidents have been of rare occurrence, and of comparative unimportance.

Lobsters.

Crabs are to lobsters what the *True Flag* is to the *New York Ledger*—the same thing only with "no continued *tails*." Cuvier, the French naturalist, calls them the short-tailed lobsters, and distinguishes the lobster proper as the long-tailed lobsters. The principal difference is in the length and structure of that member. If you are an eater of lobsters you will be thankful for the variations, for the most available flesh is in the tail, which is still more interesting to the anatomist for its complex structure, the muscles making a curious network, crossing in every direction, to give the necessary variety to the movement of that organ and its appendages. The tail is sheathed in scale armor, of which the lobster is probably the oldest wearer—six horny rings, armed with sharp points at the termination of the upper arch, and in the center of the lower, and so beautifully jointed that one plays into another with great ease, but let little fingers beware of getting caught among their thorns when the lobster rolls up his tail for a leap. Fastened to the lower segment of the rings are little hairy swimmers or "false feet," on which the female lobster glues her eggs, and carries them till they are hatched. You will see them, like the fine clusters of red beads, on the boiled lobster. You fancy, perhaps, that the splendor of the shell of the boiled lobster is his badge of seamanship—the red shirt; but he does not wear it upon ordinary occasions. It is the gay dress he puts on in which to appear in society, while his home suit is of dark green, touched with a dull red here and there. Hot water brings out his beauty, as affliction does the character of a saint

Feeders on lobsters are warned against the fatal charms of some mysterious "lady," found in his head, as they say, rather loosely. But the lady is not so attractive as to be dangerous, and perhaps not dangerous in itself if it were attractive; and it is not found in the head. It is simply the stomach, placed in an economical nearness to the mouth; for the lobster is a greedy eater, and very far fram select in his choice of meat. A sort of bony framework, peculiar to this crustaceon, keeps the stomach distended even when empty. On those ribs are five teeth, by which the voracious lobster is enabled to chew his meat after he has swallowed it—an arrangement that would be invaluable to our hasty feeders, who bolt their food and run. The membrane of the stomach distended by these original "hoops." and somewhat wrinkled, forms the dress of the "lady;" and where the ribs of this queer skeleton meet, the bony knob makes her head; and the "poison" is in the contents of the stomach, as well it may be, for the lobster feeds on every dead thing he can lay his five pairs of jaws to! Jaws, I say; but I might say feet, for to the oddity of having his ribs in his stomach, and his teeth on his ribs, he adds that of having five or six pairs of legs in his mouth. From their use and place we call them jaws; but from their structure and succession they seem to be a continuation of the series of feet.

The lobster's eyes are complex, or composed of many lenses, each a perfect organ of vision. They are hard and horny without, and put at the ends of two jointed fingers, which he runs out of the window of his head when he wishes to look about him, but when he sees danger ahead, he pulls them in and stores them away behind a thorny beam, which projects where his nose should be.

Like fishes, the lobster breathes through gills. The single, broad band of plate armor that covers his body comes down and forms a protection for the gills, under its projecting eaves. This keeps them from drying up in the sun, and enables him to live a long while out of water. In common with crabs of all kinds, the lobster has a trick of throwing off his legs just when a boy would be for taking to his, that is, when he gets caught. This is done neatly at the joint nearest the body; and after a few days, without a drop of restorative or invigorator, a new member sprouts, and soon replaces the old one. If, as Darwin would say, we have all been lobsters, what a pity that in the progress of the species this knack should be numbered among the lost arts.—*George S. Burleigh, in "Our Boys and Our Girls."*

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Science Familiarly Illustrated.

What Old Leather and Bones are Good For.

Articles are not to be despised because worn out, for wearing out means, almost always, only a change of use; when an article becomes useless for one purpose its being fitted for others. This fact is well exemplified in the value of old leather and bones. Let us consider the latter first because of its variety of uses. The fresh bones from the butcher's stall, as those of beef, which have been entirely stripped of the flesh, are excellent bases for soup. Indeed, bones alone make a far better soup than meat alone; and even after being cooked, unless boiled, bones are superior materials for this purpose. Even the rib bones of a piece of roasting beef, after having been placed once on the table, although marrowless, are good soup bones, and the skeleton of the turkey, gosling, or chicken, which as a roast has done its duty, will make a nourishing broth. Gelatin and not fat is the true foundation for soup, and this is largely contained in bones. So much for the domestic uses of bones; now let us look at their other uses.

First, then, the bone boiler deprives them of their fat, which is used for a hundred purposes, from the basis of fancy soaps and pomatums to the "slush" for ships' masts. The gelatin becomes the "isinglass" put up in fancy colored papers and sold at the groceries for making jellies, soups, and blanc mange; or it enters into the composition of jujube paste and gum drops. Old bones are the foundation of the much valued fertilizer known as superphosphate of lime. Ground and mixed with sulphuric acid they restore to the soil what it had given us in our wheat.

But they are almost invaluable in the arts. Very much of our "ivory handled" cutlery, probably nearly all of our ivory handled umbrellas, parasols, and whips, many similarly ornamented canes, etc., are handled with bone and not true ivory. In fact, some of the bones in our domestic animals approach very nearly in texture to genuine ivory. We have seen a complete set of dental instruments handled with horse bones, which made as fine an appearance as the real ivory. Bone buttons are so commonly used that only an allusion to them is necessary. Almost all, if not quite all the phosphorus employed in the arts and sciences is procured from old bones. It is probably the most valuable extract which bones yield.

But it may be questioned whether any other use for old bones can equal in value that to which they are put in the manufactures of iron and steel; and here comes in the value of old leather. The carbon contained in bones and leather is a necessary element in case-hardening iron, and also in some instances of hardening steel. For the first purpose prussiate of potash, or ferro-cyanide of potassium is largely used, but it is a general belief among mechanics that its effects are not so thorough as those from the employment of ground bones and leather scraps. The article to be carbonized or case-hardened is packed in an iron box with the ground bones and leather and exposed to a red heat for several hours—more or less, as the depth of the cementation desired—then removed and plunged into water. Its surface becomes hardened steel. For some parts of gun work and of machinery this is a very necessary process.

Then there are occasions when an extra hardness to steel is desirable; such as the hardening of dies for "raising" the steel "mills" used in engraving calico-printing rollers. These are treated in precisely the same manner as articles of iron to be case-hardened. They are prepared for being engraved—which is done by hand—by being deprived of a portion of their carbon by a process of annealing, when they become nearly if not quite as soft as silver. To harden them this carbon must be restored, and for this purpose it is doubtful if anything is better than the old bones and leather scraps which we so thoughtlessly cast aside as valueless. Fortunes were made during our late war by gathering and sending to market the bones of horses, mules, and the edible animals which accompanied our armies, together with the cast-off scraps of leather, in the form of equipments. The above are only a part of the uses of these despised articles, but our object was mainly to draw attention to the value of what are too often considered used up and worn out materials.

THE EXPENSE OF A HERO.

The old saying that republics are always ungrateful should not be accepted without liberal exceptions. While republics, as history shows, are for the most part very parsimonious with respect to expenditures which are really important—except perhaps when their existence is at stake, then money flows like water. But, on the other hand, when expenditures the most lavish, which cannot in any way benefit the nation, are necessary for some ostentatious purpose, the amount is immediately forthcoming. No voice is raised against them, no one apparently possessing the courage to brave the indignation of those noisy patriots who are always ready to grant any sum they think necessary for the display of national vanity. A case in point is the vast and quite unnecessary expense incurred in sending the immense wooden frigate *Franklin*, to Europe for no other object, in reality, than to give two or three naval officers and their wives a change to indulge in the reciprocity of champagne, balls, and dinners.

If this expensive and idle excursion could raise the price of American securities in foreign markets, we would certainly have nothing to say, thinking perhaps that the game was worth the powder; but it can have no more influence on our national progress or security than would be secured by letting the match-wood *Franklin* go over Niagara Falls.

It is quite safe to assert that the expenses of such a craft as the *Franklin* are over $2,000 per diem; or in round numbers, nearly a million dollars a year, and this to keep a vessel in commission in foreign waters which is utterly useless as a war vessel. As far as a representative of actual power is concerned, there is not a cadet in any of the European schools who does not know that the poorest of their iron-clads could set her on fire with their shells, blow her up, or sink her with her army of sailors and marines, in a very short time.

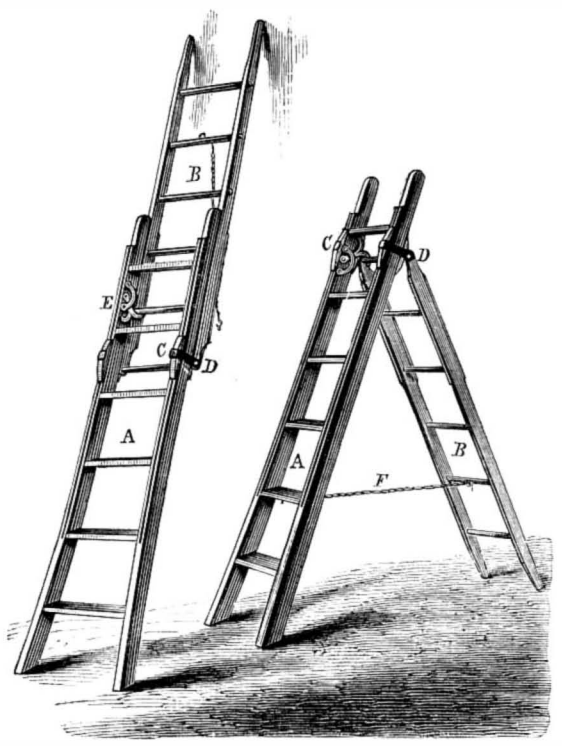
The *Franklin* is the representative of that obsolete class of kindling-wood vessels which can never again be used to advantage in Naval warfare. It is true they are very elegant as yachts, but it would be almost as agreeable and far less expensive—when it is deemed necessary by the Hon. Secretary for our gallant admirals and their families with their ladies' maids, to air themselves in foreign parts at the expense of the Nation—to supply them with a steam yacht, about one-fifth the size of the *Franklin*—in fact such as are used by many of the English swells, Mr. Lancaster, for example. A yacht such as we have suggested could, of course, save the immense expense of a regiment of men, and a few brass howitzers would answer just as well for salutes as the tuns of cast iron installed in the *Franklin*.

The money saved might be devoted to the benefit of the one armed and legless Union soldiers one frequently sees about the street operating on grind organs.

A friend at our elbow hints bravery and bloody combats. Admitted, but then let it be borne in mind that frequently more men were killed and wounded in before-breakfast skirmishes in the Armies of the Potomac and the West than in both the engagements of Mobile and New Orleans put together.

VOGELMANN'S COMBINED STEP AND EXTENSION LADDER.

This combination ladder appears to be exceedingly simple in construction and easily adjusted. The main portion, A, is furnished with steps, while the other, B, has simply "rounds." As a step ladder, B is a support or brace to A. In the bars of A, are channels or grooves in which slide the ribs of blocks,



C, connected by a strap or clamp, D, which projects at the back sufficiently far to receive a bolt or rivet that acts as a hinge to attach the portion, B, to the step ladder, A. At or near the upper step of A is pivoted a double hook, seen at C and E, the swing of which is governed by a semi-circular guide. A line or iron rod, F, prevents too great a spread of the two portions when combined as an ordinary step ladder, while the engagement of the lower prong of the double hook with the upper round of B, holds the two parts in their relative vertical position.

When used as an extension ladder the part, B, is slid up on A to the requisite point and held by the engagement of the upper prong of the double hook with one of the rounds of B. The union and steadiness of the two parts in this position is further assured by ribs on B fitting in channels in A, as well as by the rigidity of the clasps, D. By unhooking the line or rod, F, and sliding B with its blocks, C, and clamps, D, entirely off, the two ladders can be used separately, and whether thus separated or together the two can be folded instantly for transportation or moving from place to place.

Patented July 30, 1867, by Timotheus Vogelmann, who may be addressed relative to this apparatus at Hamilton, Ohio.

Making Railroad Iron Direct From the Furnace.

Mr. Daniel E. Brady writes us that he is erecting a furnace for producing steel and iron for making railroad bar direct from the furnace, and that it will be in operation by Sept. 15th, when he will invite all interested in steel and iron to witness its operation. The furnace is located one-and-a-half miles from Rockbridge, Alum Springs, in Rockbridge county, Va., and only six miles from the Virginia Central Railroad.

SALT FOR INVALIDS.—"Should salt be used as seasoning in rice or any other article of food prepared for invalids?"

No. Salt should not be used by either sick or well people in any form. It is never useful; always injurious.—*Herald of Health.*

Editorial Summary.

ELIMINATION OF HYDROGEN.—M. Heurtebise communicates to a late number of *L, Invention* a plan for producing and economically employing hydrogen gas, which is both new and valuable. He places charcoal in a retort and raises it to a red heat, then passing a stream of carbonic acid over it, each molecule of the acid absorbs two atoms of carbon forming two molecules of oxide of carbon. In another retort heated red hot he passes two currents, one thus obtained and another of superheated steam, when two atoms of carbonic acid and two equivalents of hydrogen gas result. The carbonic acid gas is again passed over the heated charcoal and four equivalents of hydrogen are obtained. A continuous action is thus kept up, with a steady supply of hydrogen.

THE PNEUMATIC IN FRANCE.—Written telegraphic dispatches are transmitted from the central telegraph station in Paris to various other points of business through iron tubes three and a half inches diameter, laid down not very far under the surface. At each station there is a reservoir of water compressing by its weight a reservoir of air beneath it. The telegrams are placed in a cylinder fitting the tube air tight; the compressed air is turned on, and the cylinder with its roll of dispatches is shot through to the next station, or, if by any chance it sticks fast at any point, the water from the reservoir is let in, and by the fall of water the point of stoppage is marked. The system is as simple as it is economical.

THE GLOVER MUSEUM, a valuable collection of specimens of natural history, has at length come legally into the possession of the Government. The price paid was $10,000. The collection is the result of fifteen years spent in scientific research by Mr. Glover and the expenditure of several thousands of dollars. The museum, which now fills two rooms in the Patent Office building, will soon be removed to the new building, now in process of construction for the Agricultural Department, and it is to be made the nucleus for an extensive collection of specimens and books calculated to impart information on the various branches of industry connected with agriculture.

TREDEGAR IRON WORKS.—These works, at Richmond, Va., covering eight acres of ground, employed during the past month six hundred hands, and disbursed $25,000 in wages. The Richmond *Dispatch* says:—"Among the heavy jobs just completed and now being shipped, are two iron bridges of superior construction. One of these is for the road now building between Columbia, S. C., and Augusta, Ga. It will cross the Congaree river, and consists of three spans 160 feet long and seven spans 80 feet in length. The aggregate weight of this bridge will be within a fraction of 500,000 pounds. C. Shaler Smith, Esq., of Baltimore, is the engineer."

MAP OF THE MOON.—Our nearest planetary neighbor is being mapped out for our inspection and study, on a scale of 200 inches to the moon's diameter. The work has been undertaken by an English scientific body, and two sections just completed comprehend two areas of twenty-four superficial degrees each, which are equal to 17,688 square miles in the two. On these sections the plains, craters, mountains, valleys and other objects are laid down in outline, each known object being referred to in the text accompanying the map.

FRENCH VELOCIPEDES.—In Paris the young men have inaugurated velocipede clubs, and may frequently be seen riding through the streets at a great speed. The fabrication of these vehicles has been brought to such perfection, both for velocity and lightness, that at high velocity they are scarcely visible, and the man has the comical appearance of flying through the air on an imaginary tread mill. Experts in this mode of locomotion make twelve miles an hour, and a higher speed will be attained.

TO IMITATE MAHOGANY.—The surface of any close-grained wood is planed smooth, and then rubbed with a solution of nitrous acid. Next apply with a soft brush a mixture of one ounce of dragon's blood dissolved in a pint of alcohol and with the addition of a third of an ounce of carbonate of soda. When the polish diminishes in brilliancy, it may be restored by the use of a little cold-drawn linseed oil.

POISONING BY CHLORINE VAPOR.—Professor Maisch says that a direct antidote to the poisonous effects of the inhalation of chlorine is sulphuretted hydrogen, the halogen combining instantly with the hydrogen, liberating sulphur. The professor has tried it himself after accidentally inhaling chlorine, and obtained immediate relief. The same remedy would doubtless be effectual in the cases of bromine poisoning.

DENTAL AMALGAM.—A young lady who had been languishing for several years in St. Louis under a mysterious disease which baffled the skill of the most eminent physicians, it has been ascertained by a dentist, was dying from a slow poison distilled through the system by the amalgam with which two of her teeth had been filled.

ASPARAGUS is a very healthful article of diet, for the reason that it is nutritious, easily digested, and contains no properties which are injurious to the human organism.

An interesting historical print, a fac-simile of the death warrant of Charles I. of England, has been issued by Thos. F. Carter, Louisville, Ky.

Two English inventors have just exhibited in the streets of Paris a musical locomotive, which ran backwards and forwards to the air of "The Tannhauser March."

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NEW NOMENCLATURE OF DISEASES.—The result of labors extending through several years, of committees appointed by the London College of Physicians appears in a new nomenclature and classification of diseases. This work has been prepared voluntarily and gratuitously, and will henceforth be used by the medical departments of the English army and navy. Each title is translated into the Latin, French, German, and Italian languages, so as to come into general use abroad as well as at home. In the new nomenclature the utmost precision of language consistent with intelligible simplicity has been aimed at and attained. The first necessity of sanitary records, is that for statistical and scientific purposes the same thing shall be always signified by the same title. The above mentioned work furnishes the means by which this end may be attained, and coming from so high authority, its acceptance as a universal standard, seems certain.

"COMPARISONS ARE ODIOUS."—Some writer of leisure on an exchange, has been figuring upon the amount of noise which an average sized man would be capable of making provided his voice power as compared with that of a locust, was commensurate with his greater size and weight. Supposing that the lord of creation weighs as much as sixteen thousand of the stentorian insects whose notes can be recognized at the distance of one sixteenth of a mile, then the human competitor ought to be able to make himself heard one thousand six hundred miles away, and when he sneezed "his house ought to fall about his ears." Again, supposing a flea to weigh one grain, which is more than its actual weight, and to jump one and one half yards, a man of one hundred and fifty pounds, with jumping powers in proportion, could spring from his office in this city and land among the affrighted inhabitants of Cochin China.

THE DIET OF MOLES.—A champion for these indefatigable excavators has been found in a Mr. Weber, one of the *savans* of Zurich, Switzerland. This gentleman examined the stomachs of a number of moles caught in different localities, but failed to discover therein the slightest vestige of plants or roots; whereas they were filled by the remains of earth worms. He shut up several of these animals in a box containing earth and sod with growing grass and a smaller case of grub or earth worms. In nine days, two moles devoured 341 white worms, 193 earth worms, 25 caterpillars, and a dead mouse. Fed with a mixed died of raw meat and vegetables, the moles ate the meat and left the plants; and when vegetables exclusively were dealt out to them, in twenty-four hours both died of starvation.

CHEMISTRY OF RIPENING FRUIT.—The chemical changes which fruit undergoes in passing from a green into a ripe state, have been made the subject of study by Dr. Dupré and communicated by him to the London Chemical Society. Although the relative quantity of acid in the fruit diminishes as the ripening progresses, the absolute quantity remains tolerably constant, or at least diminishes very slowly. There can therefore be no doubt that the sugar increases in quantity, and it seems not unlikely that this development takes place through the action of the acid similarly to the production of sugar from starch by the action of diluted acids. In one hundred average-sized apples gathered in September, October, and November, Dr. Dupré found 2·5 grammes, 1·9 gramme, and 1·8 gramme of tartaric acid respectively.

INFINITESIMAL MEASUREMENTS.—The Kensington Museum is to be recipient of a measuring machine demonstrating the one millionth part of an inch. This instrument and three original true planes, are to be perpetually preserved, and a sufficient endowment has also been made for providing funds for the delivery of lectures explanatory of such instruments. The donor, Mr. Whitworth, of ordnance notoriety, says their importance will be manifest when it is considered that the value of every machine, when made of the best material, depends on the truth of its surfaces and the accurate measurement of its parts.

SMALL MIRRORS, it is announced, are placed outside the windows of the private houses in Brussels and other German cities, by means of which the lady inmates are able to see, without looking out, those passing by in the street below, the figures being reflected in the glass. A visitor is seen by the same means when he appears at the door, and "at home" or "not at home" is often thus determined upon.—*Phil. Ledger.*

Many dwelling houses on the Fifth Avenue and in other fashionable streets in this city have had adjustable mirrors thus placed and in operation for a number of years. Can it be possible that such a contrivance is a novelty in Philadelphia?

A farmer in Napierville, Ill., a few days ago saw his machine on fire from the effect of friction, and in an attempt to extinguish the fire, got his left foot in the machine, and was badly mangled. In looking to the man's injuries the fire was forgotten and it consumed the machine.

C. Z. CUTTING, Assistant Examiner in the Patent Office, Washington, and brother-in-law of Senator Doolittle, died Sept. 1st of typhoid fever.

THE annual New York State Fair, for the exhibition of Agricultural and industrial products, will open in Buffalo, on Tuesday, October 1st.

The Science of Blacking Your Boots.

By a member of the Boot-black Brigade. Don't do it in the sun-shine, for it won't shine your boots. The warmth dries the blacking rapidly and prevents a good polish.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

CORN PLOW.—John R. Thomas, Mifflintown, Pa.—In this invention the plow can be adjusted so as to throw the dirt in rows or not, at pleasure. The shape of the plow point and the means of attaching and regulating the pitch of the plow are also improved.

AUTOMATIC BARREL FILLER.—Wm. S. Payne, Petroleum Center, Pa.—This barrel filler is designed to be used for filling casks, tanks, cisterns, the water tanks of steam engines, and in general all vessels or receptacles that are to be filled with liquids. Its object is to economize labor, one man with my barrel filler being able to accomplish the work of six men without it.

CARBURETING AIR.—Levi Stevens, Fitchburg, Mass.—This invention consists in the use of a new device for regulating the flow of the carbureting fluid into, and preserving it at the proper level in the carbureting chamber, of an apparatus which combines the meter wheel and regulator patented by me April 9th and June 11th, 1867.

FLOOD GATE.—C. B. McKinney, Houston, Ohio.—Attached to sills buried in the ground parallel to the direction of the water course are posts which form guides for the gate which is raised by the pressure of the stream against the lower bar which presents an oblique face to the current.

CLOTHES HORSE.—James Greenhalgh, Jr., Glendale, R. I.—This invention has for its object to furnish an improved clothes horse, so constructed as to furnish a large drying surface when extended, and which, when not in use may be folded into a small compass, and which shall at the same time be simple, strong and inexpensive in construction.

COMBINED CORN SHELLER AND FAN MILL.—J. P. Hoagland and Moser, Centralia, Pa.—This invention has for its object to furnish an improved machine by means of which the corn may be rapidly and thoroughly shelled and cleaned ready for use or market at one operation.

GRINDING ATTACHMENT FOR LATHES.—Charles Coester, Jr., and A. B. Lawther, Bridgeport, Conn.—This invention has for its object to furnish an easy and convenient means by which a grinding wheel may be applied to an ordinary lathe.

BRAKE FOR HORSE POWER.—A. D. Tingley, Adrian, Mich.—This invention has for its object to furnish an improved brake for attachment to horse powers which shall be simple in construction, effective in operation, easily and readily applied, and wholly out of the way.

DITCHING PLOW.—William R. Clark, Indianola, Ill.—This invention has for its object to furnish an improved machine for forming open ground ditches easily and quickly, which shall be simple in construction and effective in operation.

WASHING MACHINE.—Moser D. Webber, Woodbury, Vt.—This invention has for its object to furnish an improved washing machine so constructed and arranged as to be easily operated and to wash the clothes quickly, evenly and without injury to the fabric.

SLIDE FOR EXTENSION TABLES.—H. Olds, Syracuse, N. Y.—This invention has for its object to furnish an improved slide for extension tables, simple in construction, easily applied, and effective in operation.

SIDEBOARD OR CLOSET.—J. B. M. Fifield, Philadelphia, Pa.—This invention consists in combining with a sideboard or closet, a table-board, in such manner that the table, to be used, can be brought into the proper positinn, but when not in use, can be made to all external appearances a part of the sideboard or closet itself.

SNAP HOOK.—Henry S. North, Middletown, Conn.—This invention consists in extending the rear end of the movable jaw to the hook, beyond its axis or joint, for forming an arm for a spring bolt to pass through and lock it, which bolt is arranged to slide in the tail end to the fixed arm or jaw of the hook.

PIN BOOK.—G. L. Turney, London, Eng.—This invention relates to a holder for pins, which is in the form of a book, the pins being inserted in the several leaves constituting the book, which leaves are bound together at one edge, and are provided with suitable shaped cover or lid pieces for inclosing or shutting up the whole series of leaves forming the book.

LUBRICATOR FOR STEAM ENGINES.—Clark W. Doten, East Boston, Mass.—This invention relates to a method of constructing lubricators for the steam chests and cylinders of steam engines, and it consists in operating valves by a tubular feeding spindle and in the general arrangement of its parts.

STEAM ENGINE.—John Fairclough, St. Joseph, Mo.—This invention relates to a new method of admitting steam into a steam engine cylinder, and exhausting it therefrom.

VALVE MOTION.—John R. Fish, Fort Wayne, Ind.—This invention relates to a new and improved arrangement whereby steam valves which are controlled in their motion by a link, are made to operate uniformly under all circumstances during the revolution or stroke of the engine.

WAGON HUB.—Welcome C. Tucker, Richmond Switch, R. I.—This invention relates to an improvement in the construction of wagon hubs, and consists in connecting the hub with the axle by cap flanges and securing the hub on the axle with a cap flanged nut, in such manner that the bearing of the axle shall be entirely closed at both ends, to retain the oil and exclude dust and dirt.

SHIFTING RAIL FOR BUGGY SEATS.—C. Disser, West Union, Ohio.—This invention relates to the securing of the rail to buggy seats, more particularly to and around the back and ends of such seats, whereby, while it can be set on and removed from the seat with ease and readiness, when on, it is perfectly firm and secure.

STOVE.—F. Gilman, Minneapolis, Minn.—This invention consists in constructing the sides and end, and also the top and bottom plates of the stove, in such a manner that a series of vertical air tubes shall surround the stove, and also in the arrangement of the ashpit and grate, in combination with a heating stove.

FOUNTAIN PEN HOLDER.—Peter Gabriel, Seymour, Conn.—These improvements consist in constructing the pen holder in such a manner that if its end holding the pen be dipped into the ink, with the opposite or upper end of the holder in the mouth, the ink can be sucked or drawn up into the body of the holder, which is made hollow therefor, and without danger of the ink coming in contact with or being drawn into the mouth. Also, in a novel construction of the holder at the end at which the pen is inserted, whereby the supply or flow of ink to the pen from within the holder can be entirely stopped, and also regulated and adjusted at pleasure, and according to the quantity which may be necessary for this or that writer who may be using the pen, and to such a degree of nicety as to obviate all possibility of blotting the paper from a too large quantity of ink upon the pen.

GRAIN MEASURE.—N. M. Lurton, Newbern, Ill.—This invention relates to a method of measuring grain as it comes from the thrashing machine, and it consists in providing a box into which the grain is delivered, with a revolving wheel and indicator, at its upper part, and a slide at its lower end with a measure attached.

SELF-REGISTERING THERMOMETER.—Martin Ames, New Ipswich, N. H.—This invention relates to an improvement in a thermometer for registering the extremes of temperature that may occur within any stated period, and consists in connecting coils of metal in the form of ribbon of different capacity, for contraction and expansion, under the influence of different degrees of heat, with a suspended needle or vernier for indicating the temperature above and below zero, upon a circular graduated scale, and connected therewith two other independent hands or pointers, which are moved in opposite directions by the action of the needle, to be kept at the lowest and highest point of divergence from the starting point of the needle, and thus indicate the change of temperature that may take place within a given time.

RAILROAD CAR BRAKE.—Thomas B. Comins, Jr., Lowell, Mass.—This invention consists in attaching the cam directly to the end of the shoe bar and not to the lower end of the shoe, the shoe being done away with and the cam only applied as a brake which, it has been found, operates better than the shoe alone and as good as the shoe and cam combined. The eccentric is weighted so as to swing clear of the wheel, when not applied.

ROTARY PLOW.—Henry Berkstresser, Quaker Bottom, Ohio.—This invention relates to a rotating plow, and consists in placing several plows, with their mold boards, on one side upon the periphery of a large wheel, which is mounted on a truck frame, and connected by gear with driving wheels attached to the truck frame or carriage in such a manner that the wheel with the plows shall revolve and open a furrow by the successive penetration of the plows into the ground.

MACHINE FOR LINING PERCUSSION CAPS.—Andrew J. French, Waterbury, Ct.—This invention consists in the use of a horizontal sliding plate, which is provided with holes which are arranged in rows, and in which holes the caps are placed. A punch is brought down into each hole, lining all the caps in succession, the punch moving on a stationary guide across the said horizontal plate, so as to come over each hole in one row of holes in the plate. When one row has been lined, the plate is moved so that the next row is brought under the punch, which moves along this row, lining each cap in the same. All the movements are automatic, and all the parts are moved at the proper time and in the proper direction, by simply revolving the driving shaft.

LOCK AND ALARM ATTACHMENT FOR MONEY DRAWERS.—J. H. Weaver, Columbus, Ohio.—The object of this invention is to so arrange the lock of a money drawer, that the said drawer can be easily opened by all persons who are acquainted with its mechanism, while, when burglars, or others, not being acquainted with the mode of operating the same, try to open it, it will not only effectually resist all attempts at opening, but an alarm will also be sounded, while such an attempt is being made.

TRAPSETTER.—Israel Miller, Bryan, Ohio.—This invention relates to an improved trapsetter, and consists of a shaft carrying a bailing rod. A common box or cage will serve for a trap, which is placed inverted with one edge on the ground, and the opposite edge resting on a flange on the outer edge of the shaft, the shaft is set on end in a cup so that a very slight touch on the baiting rod is sufficient to upset it when the box trap falls, confining the game without injuring it.

BREECH-LOADING FIRE-ARM.—M. Pidault and G. E. Lagieze, Paris, France.—This invention relates to a new breech-loading fire-arm which although of very simple construction and of great strength, allows rapid firing, only few motions being required for loading and firing.

VALVE.—G. L. Grant, Rockville, Conn,—This invention relates to a valve of novel construction which is arranged altogether without any packing, which can be used as a globe or check valve and which will always keep itself free from dirt.

NOZZLE FOR HOSE PIPES.—Charles Crook, Yonkers, N. Y.—The nature of this invention consists in making a nozzle for hose pipes in such a manner that it can be adjusted so as to throw a large or small stream of water without the necessity of changing nozzles as has heretofore been done.

THRASHING MACHINE.—Benjamin Yeakel, Allentown, Pa.—The object of this invention is to construct a thrashing machine which may be regulated so as to adapt the machine for use on long or short straw and which will therefore be very useful and practicable on all farms.

FRAME FOR MIRRORS, ETC.—O. L. Gardner, New York City.—This invention principally consists in constructing a frame for mirrors, etc., in such a manner that its side pieces can be adjusted either nearer to or farther from each other and there set according to the size of the glass, etc., to be placed therein within certain ranges or limits, whereby frames can be made or built as to be more generally adaptable for the reception of mirrors of varying widths.

WATER WHEEL GOVERNOR.—Charles D. Blakeslie, Grand Rapids, Mich.—This invention which relates to a water wheel governor and consists of a curb of a size to correspond with the water wheel and volume of water to be used having apertures for the inlet of the water upon two cylindrical valves which revolve against each other and are automatically operated by a ball governor.

COCKEYE.—John Haggerty, East Springfield, Pa.—This invention relates to an improvement in cockeyes and consists in a bed of malleable iron in which a spring bolt is set and held in place by a sliding plate. This is sewed between the two thicknesses of leather in the tug, and clamps the head of the whiffletree.

ATTACHMENT FOR BREAST COLLARS.—R. E. Miles, Louisville, Ky.—This invention consists of an attachment for breast collars, and is adapted for double harness. It is intended to keep the collar secure in place when backing, and this object is attained by attaching the round leathers or straps and martingale to the loops of the attachment, and running the former to the rings and thence to the pad.

EAVE-TROUGH HOLDER.—John Marshall, Hartland, Mich.—This invention which relates to an improvement in eave-trough holders, consists in an arrangement of metal straps and ties by which the trough is hindered from rising out of its seat and kept securely in place.

SNAP HOOK.—Enoch Covert, Farmer Village, N. Y.—This invention, which relates to an improved snap hook, consists in having the spring which operates the closing bar, countersunk in the shank of the hook.

CHAIN CLASP.—P. W. Dalton, Jersey City, N. J.—This invention relates to a device for securing and holding hogs in the process of slaughtering.

FOOT TRIP HAMMER.—This invention consists in an arrangement whereby a trip hammer is operated by the foot, with the aid of springs and a rack and pinion, by which the hammer is made to traverse the anvil, and also in the device for reversing the hammer.

VENTILATION OF ROOMS, ETC.—Orren S. Trexler, Napierville, Ill.—This invention relates to a method of ventilating rooms in dwelling houses, manufacturing establishments, and all buildings or apartments where vapor arises and where it is desired to introduce fresh air.

CORN DROPPER.—Charles E. Lipe, Fort Plains, N. Y.—This invention relates to a device for dropping corn, and it consists in a novel construction and arrangement of parts, whereby the desired work may be done very expeditiously and in a perfect manner.

TRAP FOR CATCHING QUEEN BEES.—Volney Leonard, Springfield, Pa.—This invention relates to a trap for catching queen bees during the issuing of a swarm from a hive, and is designed to prevent the swarming of bees, or to place swarming under the complete control of the apiarian.

FLYING ATTACHMENT.—Wm. F. Quimby, Wilmington, Del.—This invention relates to a flying attachment whereby a person will be enabled to fly or propel himself through the air, similarly to birds. The invention consists substantially of two lateral or side wings and one dorsal wing, constructed, arranged, and applied in such a manner as to be capable of being operated by the combined action of the arms and legs.

THILL COUPLING.—Cook C. Lawrence, Homer, Mich.—This invention relates to an improved plan of constructing a coupling for the thills or poles of carriages and wagons, and consists in bolting together two plates on the under side of the pole or thills provided with segments or disks on their ends which match, when closed, to form nearly a complete disk, in the center of which is a hole for receiving the end of a plate in the bottom of the axle clip, the end of the plate is slotted to receive the periphery of the disk, and they are so connucted that the thills are held fast while they are readily coupled and uncoupled.

CAR BRAKE.—Thomas B. Comins Jr., Lowell, Mass.—This invention relates to an improved car brake, which is so arranged as to bear with more than usual power upon a point on the periphery of the wheel, while the pressure is still increased by the application of a spring which, although it serves to increase the pressure of the brake, still prevents the same from being dull, and makes the whole elastic, and more durable, and effective than the brakes now in general use.

SKID AND FRICTION ROLLER.—Francis Van Doren, Adrian, Mich.—This invention relates to a device which may be used as a skid for transporting goods from one place to another, and which can be used as a friction roller for moving goods and for facilitating the loading and unloading of carts, etc.

LIFTING JACK.—Albert Jackson, Clifton Springs, N. Y.—The object of this invention is to obtain a lifting jack for raising the axles of vehicles, which may be constructed at a very small cost, be strong and durable and capable of being operated with the greatest facility.

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HORSE HAY FORK.—M. D. Birge, Grand Rapids, Mich.—This invention relates to a new manner of operating a horse hay-fork of that class in which a spirally shaped tine is used. The invention consists in swivelling the shaft of the fork in a frame, which is suspended by a rope from the roof of the barn, or from some other movable or stationary apparatus.

SUSPENSION BEAM SCALE.—C. E. Gage, Fond du Lac, Wis.—This invention relates to improvements in a suspension beam scale for weighing heavy weights and grain in bags and consists in attachiug a bag holder to the beam for weighing grain and a device for balancing the scale.

WOOLEN LOOMS.—Chas. Schilling, Auburn N. Y.—This invention relates to a new and improved mechanical device for effecting the shed motion in power looms for weaving woolen goods, and consists in the arrangement of reverse cranks upon the driving shaft to work the piston rods which operate the jacks in the place of the more complicated arrangement of separate cranks and connecting rods.

HOISTING APPARATUS.—William Rung, New York City.—This invention relates to a hoisting apparatus in which by an endless chain motion is imparted to a shaft, on which an endless screw is arranged, which meshes into a worm wheel, that is mounted on another shaft. The latter is connected by differential gearing with two shafts, on which the drums, over which the endless hoisting chain passes, are mounted. One of the drum-shafts can be easily thrown out of gear, for the purpose of lowering the hook pulley, which slides in the lower part of the hoisting chain. The four shafts are hung in a casing which is suspended from a stationary frame, and which is provided with suitable lids for giving access to the shafts for lubricating and cleaning purposes.

SHEEP SHEARS.—George Hilgar, Brownington, Pa.--This invention relates to a new manner of attaching and operating the third or center tine of sheep shears, and consists in arranging all the parts, that the said third tine can be easily secured to sheep shears of ordinary construction, those having but two tines, and so that the said third tine can be easily removed if desired.

RIDING ATTACHMENT FOR PLOW.—Lorenzo Doming, Ottawa, Ill.—This invention relates to a riding attachment which is capable of having any ordinary tillage plow attached to it. The invention consists in a novel manner of connecting the plow to the riding attachment, and in a peculiar construction of the latter whereby it is believed that several advantages are obtained over the ordinary riding attachment in use.

TRACE FASTENER.—E. F. Lacy, Danville, Ill.—This invention consists in a novel combination and arrangement with the frame of such buckle of a clasp and spring to the wedge, whereby all possibility of the wedge becoming separated from the buckle is entirely obviated, and the working forward of the trace strap, when it is slack wholly prevented.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisemets at 50 cents a line, under the head of "Business and Personal."

☞ *All reference to back numbers should be by volume and page.*

D. M., of O. asks why elongated shot go endwise when the text books of physics teach that a rotating body will revolve about its shorter axis? Of course the question has reference to rifled projectiles whose rotating movement is due to the spirality of the gun's grooves, so far as the principle quoted affects the question. Elongated shot from a smooth bore do not always go, or rather strike endwise. If fired from a distance so short that the shot pursues a nearly direct line the shot would be expected to strike end on; but if fired at an elevation so it describes a curve, the longer axis of the shot has a natural tendency to pursue the right line and the further this is departed from the more liable the shot is to strike in some other manner. A simple diagram will readily show this. The subject, however, is one involving several principles whose relative bearings on the result are not yet clearly understood.

M. B., of Mich.—We have never yet heard a satisfactory explanation of the cause of the delicious weather which prevails in this latitude at the season known as Indian summer.

E. B., of Kansas.—The only way to keep writing ink thin with which we are acquainted is to protect it from the atmosphere. The air not only evaporates it but oxidizes it and renders it thick. Those inkstands which have a tapering tunnel in the mouth will preserve the ink in its normal state much longer than the ordinary kind because less of the surface is exposed.

J. J. T., of N. J.—We believe the author of "Vestiges of Creation" is not publicly known. The book is supposed to have been written by the Chambers, of Edinburg, Scotland. Its theories are not generally accepted by naturalists of any note.

T. S. S., of Wis.—The band saw is simply an endless saw of thin, flexible steel which runs over pulleys or rollers just as ordinary belts of leather. We believe we once illustrated a band saw.

W. M., of Pa., would like some correct rule to estimate the power of a non-condensing or high-pressure engine, as he finds in the text books rules for low-pressure engines only. He asks that the rule be published, and gives the following as an example: High-pressure, horizontal engine, diameter of cylinder, 12 inches; length of stroke, 20 inches; revolutions per minute, 95; pressure in boiler, 90 lbs.; length of steam pipe, 30 feet. Ans; We have often given the rule asked for, but will repeat it. Multiply the area of the piston by the average pressure in the cylinder—not the boiler—and that by the number of feet the piston travels per minute; divide the product by 33,000 and the result is the horse-power. You can ascertain the actual pressure of steam in your cylinder only by the indicator. If you have 90 lbs. during the full stroke the power of your engine is 97·2 horse-power. If you know the effective power in your cylinder multiply it by 1·08 and the product will be the horse power.

L. D. G., of Mass., asks "what is the composition of 'white metal?'" We apprehend that the term is not a specific one. It is used in a general way by artificers, some understanding by it one composition and others another. German silver and other compositions of copper and zinc are called "white metal." A mixture of copper 4 lbs., and tin 3oz.; of copper, 10, and zinc and nickel 5 each; of tin, 100, antimony, 8, copper, 4, and bismuth, 1, and several other compositions each produce a white metal.

G. W. H., of N. Y., and J. B. C., of Mich.—It is doubtful if any simple process is known by which hard castings of the differing qualities of iron can be certainly and unfailingly annealed. In practice we have found that packing the articles in a cast-iron box with powdered lime, or lime and iron borings or forge scales together, and luting the cover with clay, then exposing it to a steady heat (red heat) for several hours was quite effectual. Of course the cooling process must be very gradual.

A. W., of N. Y.—The Armstrong gun if of small size is a breech-loader. The large guns are muzzle-loaders.

C. P. P., of Kansas says: "It frequently occurs that the flues of boilers using the water of the Missouri become perforated in spots from the size of a pea to that of a silver half dollar. This applies more particularly to those in mills on the banks, while the boilers in the boats are not affected in the same manner." We can give no reason for this peculiar action of the water, but have noticed it in our experience. We have known a set of tubes in a heater rendered useless in two years from this cause, while precisely similar ones in other places, where the same water was used, lasted six years. Perhaps some of our practical correspondents can give an adequate reason.

L. T., of Pa., asks "What proportion of a steamboat does the machinery, including the boiler, occupy?" We are left to guess whether the proportion referred to means space or tunnage, whether the boat is a propeller or side wheel, etc. Of course a categorical reply is out of the question. We publish this inquiry as a specimen of many others received weekly, which are thrown aside without reply, simply because the writer has not given us the data we should have. Be explicit if you expect a reply.

M. W., Jr., of La., hopes we may continue our articles on boilers, and especially give some information on setting boilers. He is about putting up a nest of double-flue boilers and desires information. In No. 9, of Aug. 31st, current volume, first page, you will find the knowledge required. The only alteration advantageous to him in burning bituminous coal, is to enlarge the air pipe behind the bridge wall to about eight inches.

C. A. M., of N. Y.—Suppose a piece of iron a foot, more or less, square, with a round hole of one inch in the center be heated red, will the hole become larger or smaller by the expansion? We think, larger. 2. Suppose the external dimensions of the piece to remain the same but the size of the hole to be greatly increased. Would the same answer be applicable to this second condition? We see no reason why it should not.

J. F. R., of Vt.—The best paint for boilers we know of is asphaltum dissolved in spirits of turpentine over a gentle fire. Pulverize the asphaltum and dissolve as much as will be taken up by the turpentine. If pure it will last.

R. C., of N. Y., asks what favorable inducements are held out to practical men—mechanics—to settle in Virginia or other Southern States. We know of no peculiar inducements different from those afforded by climate, soil, natural productions, and locality. In these respects some of the other Southern States are perhaps superior.

J. G., of Me.—The making fac-similies of the impressions of coins and medals for exhibition is not prohibited by law. But an attempt to imitate all the qualities of a coin so that the copy might be used for money, would come within the law against counterfeiting. The most perfect way of copying the impressions of medals and coins is by the use of the galvanic battery.

B. L., of Ill.—We know of no better way of brightening the brass of an engine than the use of friction with rotten stone and oil, drying off with whiting or lamp black. Vinegar or a weak solution of oxalic acid followed by whiting is often used, but not with so great economy.

W. J. C., of Ind.—We have no faith whatever in the virtues claimed for the divining rod.

J. M., of Kansas, is washing woolen goods with a very hard water, "so hard that it renders the timbers of a dam in the stream as white as though they were whitewashed." He also says: "The bottom of the creek is solid lime stone; small coal veins crop out in the water and a green scum forms on the top during dry, hot weather." He has used soda ash to soften the water, and potash soap in washing. But the results are all unsatisfactory; the goods refuse to become clean. The impurity of the water is probably mainly, sulphate of lime, which would be precipitated on heating the water to its boiling point. All lime salts may be precipitated by adding to the water a solution of oxalic acid or oxalate of potash. The water, however, appears to be somewhat extraordinary and we recommend that a chemical examination be made of it.

J. A., of W. I.—Notwithstanding all that has been said in praise of amorphous phosphorus it appears not to have come into use. The increased trouble and expense of using it seem with the manufacturers to outweigh the considerations of safety to the workmen. You need no special receipt to enable you to use it in the manufacture of matches. Use it with the same materials you employ with ordinary phosphorus.

J. B., of Md.—There is no simple test of lubricating oil so good as the actual trial by an experienced observer. The total virtue of oil is made up of a great variety of independent properties, most of which require special tests. A perfect lubricating oil would have just sufficient viscidity to keep the axle and bearing from coming in contact, would be unaffected in consistency by changes in temperature, would be involatile, and would not change from chemical causes.

J. H., of N. J.—We suggest that you send an account of your supposed discovery of errors in astronomical data to Prof. Loomis, of Yale College, who will probably give you useful advice. Your polite communication in its present form is not available for this paper.

J. R., of Iowa.—Consult Wise on Ballooning for the information you seek.

W. H. H., of Ill.—A process for procuring soluble alumina at a cheap rate is certainly desirable. There would be no difficuity in finding sale for the article. The prejudices of those who use the salts of alumina would not stand long against their pecuniary interests. But remember that the soluble alumina must be afforded at a cheap rate.

J. T., of N. Y.—The magneto-electric light has been used for making photographs, but as yet only in an experimental way. There are however, reasons for believing that the light will be so economically produced that it will come into extensive use.

Engineer.—You will find reliable information on the value of hydro-carbon fuel in Ronalds & Richardson's Technology, Gmelin's and Miller's Chemistry and Balfour Stewart's Treatise on Heat. In the last two, are descriptions of the apparatus and processes used in the determinations.

I. S., of Kansas.—The mineral you send is plaster of Paris; the crystallized variety is called selenite. It is used for manure and for stucco work. We know of no special treatise on the mineral.

J. P. O. makes us wade through three written pages as a prelude to a simple inquiry about the inventive rights of employés which is answered in our little book of instructions but which we cannot send as he gives no address. If long-winded correspondents would place their inquiries first and the preface last, it would save us much time.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

Isaac J. Bogert, Fayette, Iowa, is the inventor of an improved tool. They are wanted in every saw mill in the country. Small capital only required to make them. Also, a new cheese press. Every farmer needs it. Thousands of these improvements can be sold, and he thinks there is a fortune in each. He wants to make arrangements with parties who are willing to put in a small amount of money to make and introduce these inventions. Address, by mail, as above.

All Patentees of Stone-drilling Machines send their address, with illustrated circular, to Geo. Phillips & Co., box 220, Black Hawk, Gilping county, Colorado Territory.

M. W. Manville, London, Canada, desires to obtain Paper-Bag Machines.

Parties wishing to purchase a good steam engine please address W. Burlingame, Exeter, N. H.

Persons wishing to buy small Patented articles of utility will please address, with stamp, Lechner & Stump, Sheridan, Pa. Samples 50c.

Manufacturers of Sulphuric Acid and Sulphur from Pyrites, etc., please address Abraham Reeder, Newburgh, Cumberland county, Pa.

Cotton-seed Hulling Machine Wanted. Address W. M., box 4658, New York city.

New Orleans Agency to sell Patents, etc. See Advertisement.

For Sale—Foulds' Automatic Hinge for Window Shutters.—This is the most convenient window-shutter hinge ever invented. There being no danger of breaking hinges and dropping shutters, as is very often the case now. The entire right for sale low, or will sell the Eastern and New England States. Address Cherry & Eckman, Cleveland, Ohio.

New invention. A potato digger which puts the potatoes in a bag and the small ones apart in a box. The original was made by a blacksmith at very little cost, which will be saved by the work on three acres of potatoes. Patent rights to sell: C. G. Grabo. Address care of Schober Bro., Detroit, Mich.

NEW PUBLICATIONS.

COLORADO IN THE UNITED STATES OF AMERICA. Schedule of Ores Contributed to the Paris Exposition. By J. P. Whitney, of Boston, Mass. London, E. C.: Cassell, Pelter, & Galpin.

The first gold medal of the Exposition was awarded to the Colorado ores. To Mr. Whitney the mineralogists of the world are indebted for a description of these specimens and for a chapter of useful information about Colorado and its resources. The handsome pamphlet containing this information is illustrated by two excellent maps, one of the United States and Territories, and one of Colorado, the latter one of the best that we have yet seen.

THE IRON MANUFACTURE OF GREAT BRITAIN, Theoretically and Practically Considered by W. Truran, C.E. Second edition, revised by J. A. Phillips and W. H. Dorman, C.E. New York: D. Appleton & Co.

This work is without doubt one of the best practical treatises on this subject in this or any other language. It is written by an iron metallurgist of great experience and practical skill of a high order. Of course, those familiar with the manufacture of iron are aware that Mr. Truran's views with respect to the use of hot blast are not regarded by iron managers as orthodox; in fact, according to the interpretation his critics put upon his views in this particular, the experience with furnaces during the past six or seven years does not appear to corroborate his conclusions. We are free to say, however, that in our opinion Mr. Truran, on this head, has been greatly misrepsented, and we have heard more than one furnace manager assail his views without in reality knowing what they were. Dr. Percy, the author of a late work on the metallurgy of steel and iron, assailed him in a very acrimonious and undignified manner. Dr. Percy's dissent from Mr. Truran would have carried more weight if it had been otherwise expressed.

THE MORTALITY OF NATIONS: An Address Delivered before the American Equal Rights Association, in New York, May 9, 1867, by Parker Pillsbury.

Whatever opinion may be entertained of Mr. Pillsbury as a reformer, it cannot be denied that he is a close and logical reasoner. This address bears the marks of scholarship and philosophical thought. It advocates the legal equality of the sexes, including the right of suffrage, a measure which is favored by some of the foremost thinkers of the age, by such men as John Stuart Mill and others of the progressives.

THE MECHANICIAN AND CONSTRUCTOR, Part VIII. By Cameron Knight. London: E. & F. Spon.

We have before directed attention to this serial as a work of the greatest practical value to the machinist, engineer, and general iron worker. Its illustrations are as valuable as the best mechanical drawings, and they and the text descend to the minutest details. It can be obtained by subscription of John Wiley & Son, 535 Broadway, New York city.

THE FOULING AND CORROSION OF IRON SHIPS: Their Causes and means of Prevention, with the mode of application to the existing Iron-Clads. By Charles F. T. Young, C.E., etc., author of "The Economy of Steam Power on Common Roads," "The Best Mode of Protecting London from the Ravages of Fire," "Fires, Fire Engines, and Fire Brigades," etc. With illustrations. London: The London Drawing Association, 7 Duke st., Adelphi, W. C. pp. 212.

In addition to the subjects indicated in the title page, this book discusses the relative merits of wood and iron for ship building, and concludes unreservedly in favor of the latter. The book is throughout made entertaining by appropriate historical illustrations. The arguments are distinctly and earnestly set forth, and the author everywhere shows himself to be master of his subject. The publication is timely, and we have no doubt that it will have a profound and lasting influence on the art of ship building.

A TREATISE ON ASTRONOMY, Spherical and Physical, with Astronomical Problems, and Solar, Lunar, and other Astronomical Tables. For the use of Colleges and Scientific Schools. By Wm. A. Norton, M. A., Professor of Civil Engineering in Yale College. Fourth edition, revised, remodeled, and enlarged. New York: John Wiley & Son, 535 Broadway. pp. 557.

Norton's Astronomy has for a long time been a favorite text book, and in its greatly improved form has no rival. The work comprises an account of the most recent discoveries and of the most plausible theories. We shall make use of the work as the most reliable authority on the subjects of which it treats. The publishers are deserving of praise for their part of the labor—the elegant illustrations and the handsome typography.

A TREATISE ON THE SCREW PROPELLER, etc., by John Bourne, C. E. Part XXIII. London: Longmans, Green, Reader, & Dyer.

This treatise, when completed, will be undoubtedly an authority among marine engineers. The plates are superb and give illustrations of some of the finest engines ever constructed, while the accuracy of the text is assured by the name of the eminent author. Van Nostrand receives subscriptions for this and other foreign, scientific, and mechanical publications.

EXTENSION NOTICES.

Erastus T. Bussell, of Indianapolis, Ind., having petitioned for the extension of a patent granted to him the 29th day of November, 1853, for an improvement in combined india rubber and steel springs, for seven years from the expiration of said patent, which takes place on the 29th day of November, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 11th day of November next.

James Watt, of Charlestown, Mass., having petitioned for the extension of a patent granted to him the 6th day of December, 1853, for an improvement in valve arrangement for steam hammers, for seven years from the expiration of said patent, which takes place on the 6th day of December, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 18th day of November next.

Melvin Jincks, of Dansville, N. Y., having petitioned for the extension of a patent granted to him the 13th day of December, 1853, for an improvement in turnkeys, for seven years from the expiration of said patent, which takes place on the 13th day of December, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 25th day of November next.

William Wisdom, of Brooklyn, N. Y., having petitioned for the extension of a patent granted to him the 20th day of December, 1853, for an improvement in cleansing hair and feathers from insects, etc., for seven years from the expiration of said patent, which takes place on the 20th day of December, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 2d day of December next.

Lucian B. Flanders, of Philadelphia, Pa., having petitioned for the extension of a patent granted to him the 6th day of December, 1853, for an improvement in replacing cars upon railroad tracks, for seven years from the expiration of said patent, which takes place on the 6th day of December, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 18th day of November next.

Joseph Nock, of Philadelphia, Pa., having petitioned for the extension of a patent granted to him the 3d day of December, 1853, for an improvement in hinge for inkstand covers, for seven years from the expiration of said patent, which takes place on the 13th day of December, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 25th day of November next.

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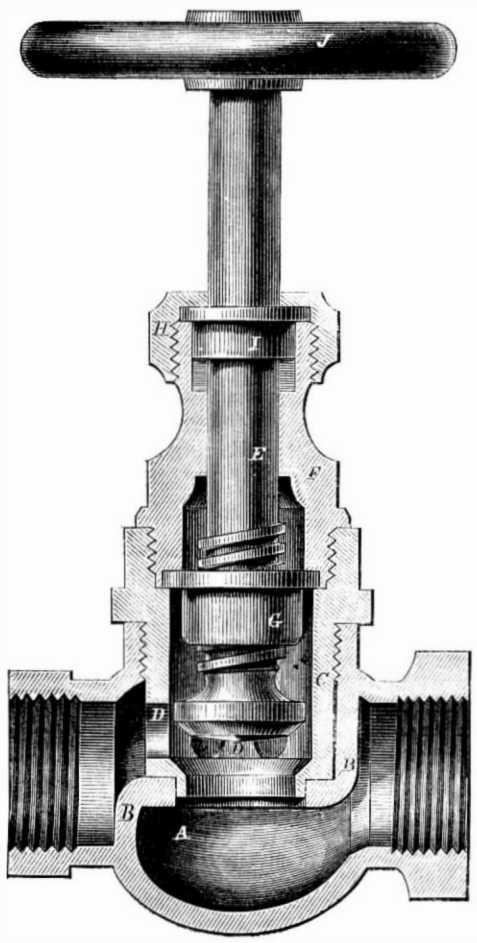
STIERLE'S IMPROVED GLOBE VALVE.

It is difficult with the ordinary globe valve to re-seat the valve when worn, as any revolution of the hand wheel—and consequently the valve—forces the latter to its seat. If the valve is to be ground to place, the globe or case must be removed, a work sometimes of difficulty, or, at least, of inconvenience. The valve shown in the engraving has an independent seat and an adjustable nut, by which the grinding of the valve to its seat may be effected without disconnecting the globe coupling from the ends of the pipe.



In the engraving, A represents the connecting shell or globe, threaded at each end to receive the pipes, and having a diaphragm or partition, B, as usual. Seated in this shell by a thread, is the valve seat, C, which has a number of openings around its lower end, as seen at D. The valve stem, E, threaded as usual, passes through the hub, F, which screws into the valve seat, C, at its top. The nut, G, rests by its collar on the shoulder of the valve seat, C, and is prevented from turning with the valve stem by projections on the bottom of the hub, F, fitting into corresponding slots in the flange of the nut, G. The valve stem is packed in the usual manner by a cap nut, H, and a gland or follower, I. The valve is turned, as usual, by a hand wheel, J.

From the foregoing description of the parts the operation and the advantages of this valve can be readily understood. When in use its action is precisely like that of the ordinary globe valve, but its main advantages are more perceptible when the valve is to be re-seated or ground. As will be seen, the valve seat, with all its connections, may be removed, and by unscrewing the hub, F, sufficiently to disengage the snugs on its lower end from the slots in the flange of the nuts, the valve stem may be revolved to seat the valve, the globe or shell remaining as a connection between the pipes. A new valve seat, or new valve can be put in place of an old one without sacrificing the other portions. This style of valve is peculiarly applicable to those of cast iron with brass mountings.

It was patented through the Scientific American Patent Agency, Oct. 2, 1866. For further particulars and for rights to manufacture, address Charles Stierle, 520 Vine street, near 15th, Cincinnati, Ohio.

A New Process for Preparing Anatomical Specimens.

Dr. Brunetti, of Padua, who received a gold medal at the Paris Exhibition, has generously communicated to the international Medical Congress the following particulars of his valuable invention. The process comprises four several operations, viz: 1, the washing of the piece to be preserved; 2, the *dégraissage*, or eating away of the fatty matter; 3, the tanning, and 4, the desiccation.

1. To wash the piece M. Brunetti passes a current of pure water through the blood vessels and the various excretory canals, and then he washes the water out by a current of alcohol.

2. For destroying the fat he follows the alcohol with ether, which he pushes, of course, through the same blood vessels and excretory ducts; this part of the operation lasts some hours. The ether penetrates the interstices of the flesh, and dissolves all the fat. The piece, at this point of the process, may be preserved any length of time desired, plunged in ether, before proceeding to the final operations.

3. For the tanning process M. Brunetti dissolves tannin in boiling distilled water, and then, after washing the ether out of the vessels with distilled water, he throws this solution in.

4. For the drying process Dr. Brunetti places the pieces in a vase with a double bottom filled with boiling water, and he fills the places of the preceeding liquids with warm, dry air. By the aid of a reservoir, in which air is compressed to about two atmospheres, and which communicates by a stop-cock and a system of tubes, first to a vase containing chloride of calcium, then with another heated, then with the vessels and excretory ducts of the anatomical piece in course of preparation, he establishes a gaseous current which expels in a very little time all the fluids. The operation is now finished.

The piece remains supple, light, preserves its size, its normal relations, its solid elements, for there are no longer any fluids in it. It may be handled without fear, and will last indefinitely. The discovery is a magnificent one, and the sooner medical schools are provided with full cabinets of natural and pathological pieces the better.

Can a Name be Signed Twice Alike!

A very interesting will case is now going on in Massachusetts. Miss Robinson claims, under a bequest, the property of her aunt, Miss Howland, valued at several hundred thousand dollars, and produces a will, and a subsequent declaration confirming and explaining the will. This declaration bears signatures exactly similar to the will, and the defence claim that they were traced from the undoubted signature to the will, and that they are too exactly like that signature to be genuine. This is the sworn opinion of several experts. Some of them testify to having discovered signs that the doubtful signatures were first written with a lead pencil and afterwards with pen and ink. Professor Agassiz swears that he is unable to detect such signs with a microscope; other experts testify that such close resemblances between signatures of the same person written at different times are not impossible or novel, and that it is precisely in such a cramped handwriting as Miss Howland's that they are to be looked for. Professor Pierce was called in as authority upon the doctrine of chances. He said:

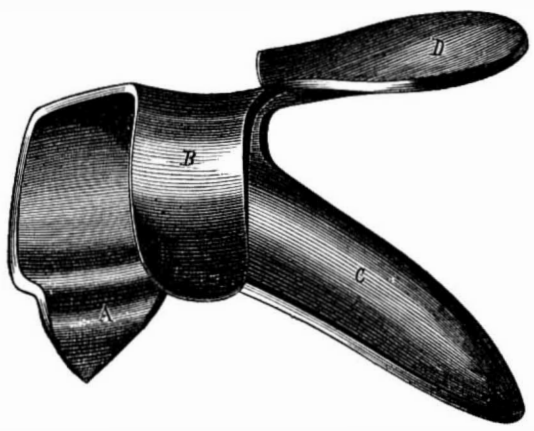
"In the case of Sylvia Ann Howland, this phenomenon—the exact coincidence of signatures—could only occur once in the number of times expressed by the thirtieth power of five or more—exactly, it is once in two thousand six hundred and sixty-six millions of millions of millions of times or 2,666,000,000,000,000,000,000,000. This number far transcends human experience. So vast an improbability is practically an impossibility. Such evanescent shadows of probability cannot belong to the actual life. They are unimaginably less than the least things which the law cares not for. The coincidence which is presented to us in this case cannot therefore be regarded as having occurred in the ordinary course of signing a name. Under a solemn sense of the responsibility involved in the assertion, I declare that the coincidence which has here occurred must have had its origin in an intention to produce it."

This view is strengthened by the fact that the signatures to the will and to the declaration were not written on ruled lines, which makes an exact coincidence still more improbable.

A minor, but important question related to the comparative excellence of the Globe and Voigtlander lenses. The principal expert on one side used one, the principal expert on the other side used the other.

ROBINSON'S CORN HUSKING SHIELD.

Although envious machines have attempted to annihilate the joyous scenes of the corn husking frolics, yet most of the maize grown in the country is still, probably, husked by hand.



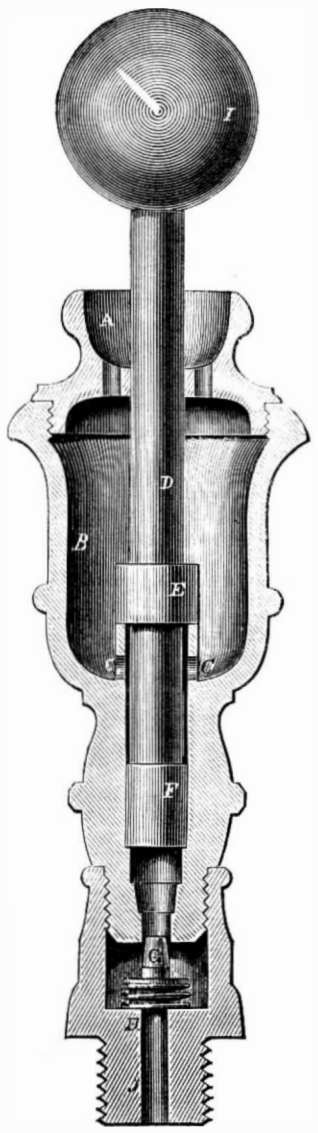
It is hard work and trying to the toughest hands. The engraving represents a shield to be worn on the thumb for facilitating the operation of husking. It is made of a piece of sheet brass or steel, cut to shape and bent to form. The point, A, is intended to split the husk; the strap, B, envelopes the thumb just back of the first joint; C is a curved brace fitting the base of the thumb on the inside of the hand, and D, is the portion covering the opposite upper portion of the thumb. Its manner of use can be readily understood from this description. It was patented April 16, 1867. For further particulars address A. C. Robinson & Co., Louisiana, Pike county, Mo.

The Way to Health.

The only true way to health is that which common sense dictates to man. Live within the bounds of reason. Eat moderately, drink temperately, sleep regularly, avoid excess in anything, and preserve a conscience "void of offence." Some men eat themselves to death, some drink themselves to death, some wear out their lives by indolence, and some by over exertion, others are killed by the doctors, while not a few sink into the grave under the effects of vicious and beastly practices. All the medicines in creation are not worth a farthing to a man who is constantly and habitually violating the laws of his own nature. All the medical science in the world cannot save him from a premature grave. With a suicidal course of conduct, he is planting the seeds of decay in his own constitution, and accelerating the destruction of his own life.

JARECKI'S LUBRICATING CUP.

The engraving presents a sectional view of one of the best and most effective cups for introducing oil to the steam chest or cylinder of the engine we have yet seen. It is perfectly simple in construction and exact in operation. It is adapted either to oil or tallow, and is constructed to prevent all back pressure from the engine. The cup, A, has a perforated bottom through the holes of which the oil or tallow reaches the reservoir, B. Rising in the center of this reservoir is a hollow cylinder, with perforations seen at C.



The stem, D, passes through this cylinder having a stop-collar, E, on it and a piston, F. This piston fits, air-tight, a bore through the stem of the reservoir, B, which at its lower end receives a valve or plug, G, having a spiral spring which bears at one end on the shoulder of the stem, H, and at the other end on the shoulder or flange of the valve plug, G.

The handle, I, is of wood and by raising it the lubricating material which has percolated into the reservoir, B, is allowed to pass down through the passage in which the piston, F, works, which is raised so that its lower edge is above the apertures, C. The act of raising the knob, I, and piston, F, creates a vacuum in the passage and the valve, G, closes the aperture between the steam chest and oiler, so that no steam can pass into the latter from the former. By pressing the valve stem down, the oil is forced into the steam chest in the same manner as the action of the air pump, the head of the valve, G, which rests on the projection, H, having cross scores on its under side for the passage of the oil or lubricant. The end stem, J, screws into the steam chest.

The valve is made of hardened steel, and the lower end of the stem is also faced with hardened steel, which prevents wear. This lubricator was patented through the Scientific American Patent Agency, Aug. 6, 1867.

For further information address H. Jarecki & Co., 89 East Ninth street, Erie, Pa., who are the sole manufacturers.

PRODUCING A VACUUM IN GUNS BEFORE FIRING.

A correspondent, Owen Redmond, of Rochester, N. Y., says that he constructed a smooth bore musket in which he produced a partial vacuum the amount of which was indicated by an index attached to the barrel for that purpose. It varied from one to two pounds per square inch and required, to produce it, at least half a minute, a sufficient objection to its practicability in action. The result was highly satisfactory in regard to the increased power of penetration. Mr. Redmond thinks it might be applied to the firing of heavy guns, he having a plan by which fifty can be exhausted of air at once.

D. G. Smith, of Carbondale, Pa, says he produced vacuums in guns six or seven years ago, by pasting a piece of paper over the muzzle and exhausting the air from the barrel by an air pump through a small cock near the muzzle. He also speaks of the increased penetration of the missile and the lessening of the recoil.

Advantages of Advertising.

The following paragraphs of letters ordering a continuance of advertisements in the Scientific American, were received one day last week:

J. H. Bodine & Co., Mount Morris, N. Y., say, "We have found by experience that every dollar spent in advertising in the Scientific American is worth more to us than $10 spent in advertising in any other journal in the United States."

C. J. Fay, Camden, N. J., says, "I intend to keep my advertisement going in this wide-world paper. I am quite sure that 70 per cent of inquiry letters to me say: 'I see your advertisement in the Scientific American,' and I presume 10 to 20 per cent more, see the same but do not mention it. Fair wind and plenty of it for the Scientific American."

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Scientific American.

MUNN & COMPANY, Editors and Proprietors.

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O. D. MUNN. S. H. WALES. A. E. BEACH.

☞ "The American News Company," Agents, 121 Nassau street, New York
☞ "The New York News Company," 8 Spruce street.
☞ Messrs. Sampson Low, Son & Co., Booksellers, 47 Ludgate Hill, London, England, are the Agents to receive European subscriptions or advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.
☞ Messrs. Trubner & Co., 60 Paternoster Row London, are also Agents for the SCIENTIFIC AMERICAN.

VOL. XVII., No. 13....[NEW SERIES.]....*Twenty-first Year.*

NEW YORK, SATURDAY, SEPTEMBER 28, 1867.

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ENGINES AND BOILERS---HYDROGEN IN BOILERS, BURNING BOILERS, SETTING BOILERS.

A correspondent inquires "what is the advantage of a high pressure over a low pressure engine or *vice versa*? One person tells me that the reason why the low pressure engines are not generally used in manufactories is that they are so bulky. If so, why use them on steamers? They do not usually have spare room there. Another says they use them on steamers because they give more power from the same coal; but they are of slow movement, then why not use them on shore, and if a quicker movement is required speed up the machinery by belts etc.?"

In England the low pressure or condensing engine has, until lately, been the favorite. Latterly, however, the high pressure is being used very extensively. We always doubted if there was anything gained by using the low pressure condensing engine except under certain conditions. The extra first cost, frequent repairs, and greater care and skill in working it neutralizes to a great extent the advantages obtained from condensation. Another objection to their use on land is that it is frequently difficult to get a supply of water for generating steam, to say nothing of the twenty-nine additional volumes for condensation. The condensing engine is not necessarily slow in movement. It may move as fast as the non-condensing engine; in fact from 350 to 800 feet per minute for the piston is no unusual speed, the latter of which may be considered pretty good speed for a non-condensing engine. One very good reason why condensing engines are used for marine purposes is that the steam is gotten rid of noiselessly. If one has traveled on Western rivers, where non condensing engines are used, and then at sea, where condensing engines are the rule, he would appreciate this fact.

Another correspondent, J. G, believes that a boiler will not explode without a sufficient cause, and that with sufficient water and a steady fire explosion is impossible. His theory of explosions—acknowledged by himself as not original—is that hydrogen, one of the gases which compose water, is the cause of explosions. He says: "May not a boiler be heated when the water is low to a temperature sufficient to decompose the water, or a portion of it, the oxygen combining with the iron and the hydrogen left free, which fluid, if ignited, would, in my opinion, produce an explosion violent enough to shatter the strongest boiler?"

This gas theory comes to us about once a month, on an average. We have replied to it repeatedly. The decomposition of the water supposed by our correspondent is a fact well established, but the hydrogen must be ignited to explode, and it is doubtful if our correspondent can tell us how hydrogen can be made to explode without a sufficiency of oxygen to make it inflammable. If the oxygen of the water has combined with the iron it certainly is not in combination with the hydrogen, and no oxygen from the atmosphere can enter the air tight boiler. The hydrogen notion is an exploded idea.

"B. O. B." of Canada says that by burning coke and the crude tar which accumulates on the bottom of oil stills he can run his five horse power engine with half the expense of wood fuel; but he is told that this fuel will rapidly burn out and destroy his boiler.

The information of our correspondent is correct. His boiler will not last so long using coke or coal oil as using wood. One reason is that the heat is more intense, and if not distributed, will act like the concentrated heat of a forge. But the principal reason why these fuels will destroy the boiler is that they contain sulphur which rapidly disintegrates the material of the best boiler iron.

An interesting communication from N. A. V., of Mass, which is intended merely as an inquiry, but which gives some facts that may be of value to others, says: "There are some points in setting a boiler which are not referred to in the interesting and valuable article on that subject in your issue dated Aug. 31st, which I think deserve attention; viz. the proper distance between the boiler and grate; is it proportionate to the area of the grate surface, or is a certain fixed distance always best? I had several evaporating pans, about thirteen inches above the grates, and it became necessary to raise the level of one pan; to save the time the grates were not disturbed, but the fire space was made five inches higher and after the change a tun of coal did one-third more work than before. Since then I have altered other furnaces and they have all operated in the same way. Does the same principle hold good in a steam boiler, and what is the best hight? Many furnaces are improperly bound together. A boiler should have a pair of strong rods, say of three-quarter round iron at the front end, one pair through the bridge wall, and another at the back end, also one pair lengthwise through each side wall. The binders should be of bar iron, one and a half by three quarters inches, turned up six inches at the end, for the rod to pass through, and put on edgewise. A furnace so secured will stand twice as long as one without proper binders and there will be no annoyance from the breakage inseparable from cast iron binders."

The proper distance from the grate to the boiler is an important point. It was inadvertently omitted in the article to which reference is made. Where space will allow we think about two feet from the bottom of the boiler to the grate is the right distance when using anthracite coal. For bituminous coal thirty inches is better. We think, from our experience with evaporating pans, you would find a better result by dropping your grate still lower, Such binders as you suggest are, we believe, generally used. The proper binding of the masonry of a furnace is a very important matter, and the suggestions of our correspondent appear to be timely and valuable. We are quite certain that money, trouble, and time could be saved by proper attention to the setting of boilers. No subject is more important to mechanics and manufacturers, and we shall soon present another illustration of this matter.

THE COAL PRODUCTION OF ENGLAND.

Our readers will remember that it is not a very long time, since the predictions of Sir William Armstrong relative to the probable exhaustion of the coal supply of England and the discussion of this subject in the House of Commons by Mr. Gladstone and Mr. Mill, caused considerable consternation in Great Britain.

Speculations of all sorts were indulged in by the press, the geologists propounded all sorts of theories and put forward all sorts of estimates as to the total quantity of coal actually deposited in the British Islands.

The political economists portrayed the most dreary future for England, and indulged in minute descriptions of the effects of the gradual falling off in coal supply—the gradual decrease of manufacture, and consequent impossibility of maintaining the present population, which must gradually decline by emigration or otherwise until a balance was reached between the mouths to be fed and the means of supplying them. Without adopting any of the estimates of the geologists as to the total quantity of coal in the British Islands, which, indeed, vary so much as to cause serious doubts to be entertained with regard to the accuracy of their predictions—it will be interesting to note that many eminent authorities estimate that beyond the depth of 4,000 feet, assuming the rate of increase to be about 15 per cent. per annum, the coal will be exhausted in about one hundred years.

All authorities seem to agree that 4,000 feet is maximum depth from which coal can be raised, simply on account of the high temperature, and that even at this depth and with the best ventilation, the colliery can only be worked during the cool months of winter.

To show the difference of the opinions that exist as to the total supply, the following opinion expressed by the *Quarterly Journal of Sciences*, three years ago, is given: "We are inclined to place the possible maximum of production at 100,000,000 tuns a year; and yet it has been shown that even with this enormous 'out put,' there is coal enough to last eight centuries."

The following table of the coal raised to the surface in England for the last twelve years will show that "the possible maximum of production" of this high authority was reached and surpassed in only two years from the date of its utterance. And also that since the great discussion in Parliament on this subject, the ratio of increase has been some 14 per cent.:

COAL RAISED IN ENGLAND FOR TWELVE YEARS.

Years.	*Tuns.*	*Years.*	*Tuns.*	*Years.*	*Tuns.*
1855	64,453,079	1859	71,979,765	1863	83,292,515
1856	66.645 450	1860	84,042,698	1864	92,787,873
1857	65,394,707	1861	83,635,214	1865	98,150,587
1858	65,008,649	1862	81,638,338	1866	101,630,543

COAL EXPORTED DURING THE SAME PERIOD.

1855	4,976,902	1861	7,855,115
1856	5,879,779	1862	8,301,852
1857	6,737,718	1863	8,275,212
1858	6,529,483	1864	8,809,908
1859	7,006,949	1865	9,189,021
1860	7,321,832	1866	9,916,244

Consequently, the coal used in England during this time, was

1855	59,476,177	1861	75,780.079
1856	60,765,671	1862	73,336.486
1857	58,656.889	1863	80.017,303
1858	58,479,166	1864	83,977.965
1859	64,972,816	1865	88,961,566
1860	76,720,866	1866	91,714,299

The home consumption has thus increased during the last twelve years, 54 per cent., and hence if the ratio of increase goes on at this rate, the eight centuries of 80,000,000,000 tuns supply existing in 1864, will be reduced in one hundred years by about forty-five billions, and in another one hundred years the eighty billions will be exhausted with no further increase in the ratio of consumption; but if the same ratio obtains, then the succeeding fifty years after the first one hundred will alone take out over one hundred billions.

But we think the opinion that the present ratio of increase cannot continue for such a period of time as even fifty years, is fully warranted, from the fact of the immense labor required to mine such vast quantities of coal.

THE EAST RIVER BRIDGE.

Engineer Roebling's report seeking to establish the practicability of the bridge project, prepared for the edification of the members of the New York Bridge company, has been made public. The leading points of his plan of construction and the dimensions of the proposed bridge, have already appeared in our columns. From the City Hall Park on this side, to the Brooklyn terminus on Fulton and Sands streets, the total length will be 5,862 feet. Of this whole length 3,480 feet will be suspended in three openings, the central span being 1,600 feet from center to center of the suspension towers. The cost of this structure is very exactly estimated by Mr. Roebling at $6,675,357. On the assumption that on the completion of the bridge as many people will avail themselves of this means of passage, as now patronize the five Brooklyn ferries, a fine investment, yielding extraordinary returns is promised to the members of the N. Y. B. company. To sink iron tubes below or upon the bed of the river, he denounces at best, as a temporary shift, and permanent tunnels of masonry only to be built when money is worth 2½ per cent, and the population shall have increased ten fold. In this we beg leave to differ from the distinguished exgineer, as our opinion, founded on some attention given to this and similar projects, is that it is very much cheaper, more feasible, and profitable to use the bed of the river as a roadway than to suspend such a structure as that proposed by Mr. Roebling one hundred and sixty feet above the water. It might be a curiosity as a work of art, and monument of engineering skill, but it might also be a monument of the folly of its builders.

We have before had occasion to remark that for an expenditure of less than the sum of money which it is proposed to spend on this single aerial bridge, the people of Brooklyn might lay down several spacious and enduring tunnels. In deed all of the principal business streets of Brooklyn and Williamsburgh could be directly connected with New York on the subterranean plan, and sooner or later these tunnels will be constructed.

It may be well for all who propose to invest this immense sum of seven millions in a single bridge to consider what would be the probable effect upon their investment, of the laying down of these underground roadways. With such competition the bridge would have to be maintained at a dead loss, instead of a profit; so it strikes us.

FAIR OF THE AMERICAN INSTITUTE.

According to announcement, the Thirty-Seventh Annual Exhibition of the American Institute of this city, was opened on Thursday, the 12th, inst., in the commodious armory of the Twenty-second Regiment, on Fourteenth street near Sixth Avenue, the building being fitted up and temporarily enlarged for the occasion. The opening of the exhibition on the day appointed was as usual premature, a large part of the space allotted to exhibitors, not being occupied, while many of the articles in position were not ready for public inspection. Although as yet very incomplete, the Fair promises during its six weeks continuance, to present a full and fine display of the products of American industry.

The opening address, on Thursday evening, was delivered by Horace Greeley, the president of the Institute. Gen. Halpine was advertised to read a poem on the occasion, but was confined to his residence by sickness. Mr. Greeley, in welcoming his audience to this festival of labor, asserted that the American Institute was about to commence the erection of a palace of Industry, which shall give a place to perpetual as well as to annual exhibitions. Within this building on the 4th of July, 1876, is to be opened the most magnificent Exposition that the world has ever yet seen, and hither the world is invited to come and see what America has done and can do, and to place in competition with it all that has been or can be done by the rival skill of the Old World.

The Recent Boiler Explosion.

On Tuesday, Sept. 10th, a boiler in Twenty-eighth street, this city, exploded and shot into the air, descending on the roof of a dwelling house at some distance, and passing through the roof and three floors to the basement or cellar. Its explosion and consequent fall caused the death of several persons. It was an upright boiler of somewhat peculiar construction, which has been illustrated and described in this paper. The real cause of the explosion cannot, as yet, be more than surmised, as up to the time of writing no investigation, either individual or official, has been made. One is ordered, however, and if close scrutiny and the assistance of practical men can determine the facts we shall have them to present to our readers in our next issue. In the meantime we forbear the expression of any opinion, which must necessarily, under the circumstances, be of but little worth.

THE CUBAN CABLE.—The shore line of the cable, after various mishaps and discouraging delays caused by unpropitious weather, has at last been successfully laid. Congratulatory telegrams were transmitted through the wires on the 10th inst., by the Captain General of Cuba, to the Council of Ministers at Madrid, on the completion of this last link in the chain of direct telegraphic connection between the Spanish possessions and the Mother country.

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EDITORIAL CORRESPONDENCE.

The Tyrolean People—Munich—Its Fine Arts and Monuments—A Curious Old Custom—Nuremburg—Its Antiquity and Inventions.

STRASBURG, Aug. 23, 1867.

During my two months of continental travel, I have met with no people that interested me so much as the inhabitants of the Tyrol.

In my childhood I was accustomed to hear songs of the "Green Hills of Tyrol." I was therefore prepared to view with delight the beautiful scenery of their mountain homes, and the rustic manner of their lives. As yet few railways have penetrated the valleys of the Tyrol, and travelers have not demoralized or modernized their primeval habits of simplicity. Most of the journeying through this region has been done by post carriage, which always carries with it a deal of romance and pleasure, that quickly passes away the moment the locomotive goes whistling through the land. A railway was opened from Innsbruch to Botgen, on the 15th of this month, through the valleys of Mount Brenner; so that now these comparatively solitary mountain passes are broken through, and the traveller has only to take a seat in the rail car at Munich and peek through the windows to see the beauties of the Tyrol and so on down to Italy—remembering as he rushes through, that along these defiles the barbarian Kings swept down from the North and overthrew the Roman Empire. The climate of the Tyrol is salubrious; the water pure; the land fertile, and the stream and mountains yield the finest fish and game, while all along the roadsteads and meadows many flowers grow indigenous, which are carefully cultivated in our gardens at home. The men wear stockings without feet, breeches that drop off at the knees, and hats tapering to the crown like a sugar-loaf with the green silk band and feather, and for Sunday, a broad leathern girdle or waist-band richly embroidered in silk. The women wear the old fashioned Pompadour waist, which sets up close under the arms; fancy neck bands made of small steel chains and clasped in front, similar to dog collars; an immense head-gear made of black silk, tied about the back of the head, and falling behind down to the waist. The Tyroleans are a people of very strong religious feelings, not unmixed with superstition, and all along the roadway the traveler cannot fail to notice the frequent occurrence of the crucifix and other emblems of their religious faith, which are rarely ever passed without a reverential bow. The practice seems to one not accustomed to it, almost like the idolatrous worship of the heathen. I regretted much that my time was so limited that I could not stay longer in the mountains of Tyrol.

Leaving Salzburg for Augsburg and Munich, the journey is accomplished in a few hours, and for most of the distance the country is a perfect plain, under a good system of husbandry; but Munich stands 2,000 feet above the sea, and the seasons are much more backward than at Vienna.

The city of Munich is interesting chiefly on account of the great attention which has been paid to the fine arts, and for its very fine monuments and splendid public edifices, for nearly all of which the city is indebted to the private purse and public spirit of ex-King Ludwig, who now resides in his palace in the city, at the advanced age of eighty-two years. The arts of painting in fresco, in encaustic and upon glass, are practised to great perfection, and it is said that more than one thousand artists reside in Munich, either attracted from other countries by the encouragement held out to them, or bred and educated on the spot. The old and new Pinacothek contain a vast collection of fine paintings of the early and modern schools. The Glyptothek contains a remarkable though not large collection of ancient and modern sculpture.

That the King was very fond of the beautiful is evidenced from the fact that whenever he saw a beautiful female face, no matter what her station in life might be, he was always desirous to have it painted to adorn the walls of his palace. The collection, which is freely shown to the public, is arranged in two of the apartments of the King's palace, and always attracts much attention. For some unexplained reason, the picture of the unfortunate Lola Montez, who was one of the King's favorites and resided in a small house near his palace, has been removed.

The Royal Library of Munich is one of the most valuable in the world, and second in size only to the Imperial Library of Paris. The building is very large and the grand staircase is very splendid. The magnificent collection of books and manuscripts, numbering upwards of 800,000, are cleverly arranged in seventy-six cabinets; and among the valuable collection of ancient works, I was shown a New Testament in Latin, 1454—being the first book ever printed; the first specimen of the art of lithography, which was invented in Munich in 1800, by Sennefelder; MSS. copies of the Gospel, written in gold letters in 870; and many other very curious and ancient books and papers, which are here preserved with great care. One of the cabinets contains a fine collection of the works of American authors.

Munich boasts of having the largest bronze statue in the world. It stands opposite to the Bavarian Temple of Fame, which was also constructed by the old King to commemorate the virtuous deeds of those Bavarians who have distinguished themselves in peace and war. This collosal figure represents the Protectress of Bavaria, with a huge lion standing at her side. In her right hand is a sword, and the left hand holds upward a wreath of flowers. The entire figure is in the most beautiful proportions, and is sixty-five feet high, weighing 230,000 pounds. It stands upon a granite pedestal thirty feet in height, through which a circular stairway leads to the head of the figure, where seats are provided for eight persons. My curiosity induced me to crawl up through the figure, where I was assured that through the eyes a fine view of the city could be obtained. By the assistance of a tallow candle and any amount of bodily gyration I succeeded in getting into the head. The day was quite warm, and I began to fear that I should come down thoroughly roasted as the reward of my ambition.

I visited the Royal Bronze Foundry, where I hoped to have witnessed the process of casting bronze figures; but at the time of my visit, no casting was being done. In the Museum of the Foundry, there are splendid models of collossus, and life figures of Washington, Jefferson, Marshall, Clay, Benton, and other of our eminent citizens, from which bronze casts have been taken for our country. There are also models of the splendid bronze doors of the Capitol, and an Equestrian Statue of Washington is now finishing, as I was informed, for Cincinnati. The familiar names of Trenton, Yorktown, etc., upon pieces in the hands of the dusky burnishers, excited a pleasing interest in that strange place.

In Munich, as at Frankfort-on-the-Main, they still practise the singular custom of keeping the remains of all deceased persons, or that are supposed to be dead, for a certain number of days to prevent premature burial.

In a building at the entrance to the cemetary the bodies are placed upon iron cots in a recumbent or half-sitting posture and upon the wrists are fastened rings which connect with wires, and alarm bells hung in the adjoining rooms of the watchmen. Each cot is numbered to correspond with the number fastened under the bell, so that in case there should be the slightest motion of the body an instant alarm would summon the watch to the spot. In an adjoining room there is a bed carefully prepared, a bath tub, electric apparatus, and restorative medicines to be employed in cases of resurrection.

At the time of my visit I counted the bodies of eight infants and eight adults all serenely reposing in a profusion of flowers and watchmen were sitting in solemn silence awaiting the click of the bell. In Frankfort not a single case of resurection has yet occurred but at Munich they had a case many years ago, so they say. Visitors view this ghastly spectacle from the outside through windows which are common to all who have a taste for such sights. Some of the churches in Munich are very curious, especially the Basilica or St. Bonifacius, built in 1835–50 by King Ludwig in imitation of Roman Basilica of the fifth and sixth centuries, to celebrate the event of his silver wedding. Externally it resembles a railroad station with a colonnade front, but the interior is splendid. The roof of wood painted blue with stars of gold is supported by sixty-six monolithic columns, each cut from one piece of gray Tyrolean marble which divide the interior into three naves producing a grand effect. The floor is mosaic and the ceilings are adorned with some very fine fresco paintings illustrative of the life and labors of St. Bonifacius. The old King has fixed his own sarcophagus in one of the side aisles where in a few more days his bones will be entombed and the Basilica will thus become his monument. It is very pleasant to look upon so many fine churches, palaces, and monuments, but it is truly sad to reflect that the money required to build them was wrung from the sweat, brawn and muscle of the hard-working men and women of Bavaria. It detracts very much from the real pleasure of travel on the continent to witness the degrading contrast that exists between the wealthy and producing classes. The injustice and oppression heaped upon the backs of the working classes, and which compels them to support by their labor and their arms, the wanton extravagancies and wars of those who claim to rule by divine right, must some day invoke the vengeance of a just God. At Nuremberg I realized more vividly than in any other city that I was in a foreign land The narrow streets, overhanging houses, with their pointed gables plainly mark the antiquity of the place, which has come down almost untouched from the Middle Ages. It was once a very prosperous free city and during its prosperity the arts and sciences flourished to such an extent that many inventions are credited to its inhabitants. A paper mill was built here in 1390. Cannon were cast in 1336. A machine for drawing wire was put into operation in 1360. In 1560 Hans Lobsinger invented the air gun. Denner invented the clarionet in 1690. Nuremberg also claims the honor of first manufacturing playing cards, egg shaped watches and gun-locks, and in a dungeon under one of the towers of the old city wall there is to be seen at this moment a machine called the Iron Virgin which opens by secret springs and is armed inside with spikes which pierced the body of the victim thrust into its awful folds. The Nurembergers are not disposed to claim the honor of this invention. The honor of the invention of the guillotine for cutting off heads is claimed for a French physician from which the instrument takes its name, but among the frescoes that adorn the walls of the old town-hall there is a representation of this machine painted upward of three hundred years ago, which shows that it is of much earlier date than the French Revolution.

To employ the expressive figure of speech of one of our distinguished fellow citizens, I have "swung around the circle," and now find myself once more on the Rhine in the ancient old town of Strasburg which is chiefly famous for being well fortified, and for its tall cathedral spire, and *patés-de-fois-gras* or enlarged geese livers. Every thing is in a state of fermentation as the Emperor and Empress Napoleon are expected to sleep here to-night on their return from Salzburg where they have been to pay a visit to the Emperor and Empress of Austria. An enthusiastic Frenchman said to me "there must be a war next year." I asked him why, and he seriously declared that "there were too many people in the world and it was necessary to kill off some of them."

S. H. W.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office,

FOR THE WEEK ENDING SEPTEMBER 10, 1867.

Reported Officially for the Scientific American

PATENTS ARE GRANTED FOR SEVENTEEN YEARS the following being a schedule of fees:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Reissue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing a Disclaimer	$10
On filing application for Design (three and a half years)	$10
On filing application for Design (seven years)	$15
On filing application for Design (fourteen years)	$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application.

☞ *Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to Inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.*

68,589.—HOT AIR FURNACES.—James Albee, Boston, Mass.

I claim arranging the lining or fire pot in relation to the corrugations of the casing, in such a manner that the descending draft flues, C, C' C'', &c., are formed substantially in the manner and for the purpose set forth.

68,590.—METHOD OF COATING AND WATER-PROOFING WHIPS.—M. Anton, (assignor to self and C. F. Vonde Luke,) Huntington, N. Y.

I claim the water-proof and mastic composition when composed of the ingredients set forth and the mode of applying the same to fabrics, substantially as herein specified.

68,591.—SHEEP CHAIRS.—A. D. Atwood, Saybrook, Ill.

I claim the revolving seat C, in combination with the flexible back, F or G, substantially as and for the purpose set forth.

The fleece tables, D, in combination with the seat, C, and backs, F G, substantially as described.

The movable ribs, M M, in combination with the back bar, F or G, substantially as set forth and described.

The spring, J, and back, F, in combination with the seat of a sheep chair.

A sheep chair constructed with the pedestal, A, crosshead, B, seat, C, and table plate, N, fitted to each other, substantially in the manner shown, so that the whole may be taken apart without the removal of any fastening.

The fleece table, D, constructed as described, so that by the removal of the rim wire, said table may be folded like a fan.

68,592.—DEVICE FOR NICKING SCREWS.—J. A. Ayers, (assignor to National Screw Company,) Hartford, Ct.

I claim the use of two or more screws situated in different planes and operating successively upon the heads of screws or screw blanks to form a dovetailed nick or slot, substantially as set forth.

68,593.—MACHINES FOR MAKING NEEDLES.—Richard T. Barton, New Haven, Ct., assignor to self and Wm. H. Fisk, West Meriden, Ct.

1st, I claim the combination of the cams, C1 C2 C3 C4 C5 C6 C7 C8 C9; and the levers, L2 L3 L4 L5, N N E T and U, the feeding mechanism, F, the cutter H, the feeding rack, M, the bar, K, the sharpening tools, Q Q1, the punch, V, the shearing press, X, and the milling tool, Y, all constructed and arranged substantially as specified, the whole forming a machine for making needles, as herein set forth.

2d, The sharpening tool, Q Q1, constructed substantially as herein described.

68,594.—CARRIAGE WHEEL.—Augustus Beale, Stamford, Ct.

I claim in combination with a spoke and felly of the wheel of a vehicle, the socket, D, and screw cap, C, when both parts are constructed, arranged and operating in substantially the manner herein specified.

68,595.—KNITTING MACHINES.—Dana Bickford, Boston, Mass.

1st, I claim the combination of the pivoted cam, G, indicator, D, and set screw, C, as and for the purposes set forth.

2d, I claim the clasp, E, in combination with the cylinder, A, as and for the purposes set forth.

68,596.—CARRIAGE AXLE AND HUB.—Lafayette Blair, Painesville, Ohio.

1st, I claim enclosing within a hollow tube, H, an elongated spindle constructed as shown in fig. 5, and secured therein by the nut, I, the said tube, H, being provided with bearings, h h', annular flanges, a b, notch, g, lubricating holes, e d, and the said nut, I, with the broad annular flange, I' and screw hole, d', all operating as and for the purposes set forth.

2d, I claim the hollow tube, J, provided with the sleeve, K, screw hole, i, and plug, L, in combination and operating in connection with the subject of my first claim, substantially as and for the purpose stated.

3d, I claim the arrangement of the annular rim, G, of disk, D, and annular flanges, a b, of tube, H, whereby an annular recess, k, is enclosed for the purpose of allowing water or dirt to escape through the hole, g, substantially as herein set forth.

68,597.—APPARATUS FOR BREAKING THE STEMS AND LEAVES OF TOBACCO.—Nicholas H. Borgfeldt, New York City.

I claim the scolloped sharp edged circular ribs, b b', on the rollers, C C', in combination with the comb shaped scrapers, D D'' substantially as and for the purpose set forth.

68,598.—STEAM GENERATORS.—J. F. Boynton, Syracuse, N. Y.

1st, I claim the perforated tube, B, within the boiler, or its equivalent, for equalizing the temperature of the steam in the boiler, as described.

2d, In combination with a steam boiler, I claim the automatic heater and feeder, when constructed, arranged and operating substantially as described.

3d, I also claim in combination with a steam boiler, a double registering thermometer, to indicate the temperature and thereby show the pressure of the steam in the boiler, substantially as described.

4th, I also claim, in combination with a steam boiler, a thermometer of metal, suspended in the boiler, as shown at T', in the drawing, and mounted with a glass tube to exhibit the column of mercury, as described.

68,599.—WASHING MACHINE.—Thomas Brown, Roseburg, Oregon.

I claim the combination of the frame, B, jointed at d, with the beater, C, and ribs inclined towards the center, and the rubbers at the bottom of the tub, also similarly inclined, all arranged and operating substantially as and for the purposes herein described.

68,600.—IMPROVEMENT FOR PREVENTING A HORSE FROM RUNNING AWAY WITH A CARRIAGE.—Edward E. Burnham and George Brown, Gloucester, Mass.

We claim the employment or combination of the elastic band or connection with the carriage wheel and the rein of the harness, under circumstances, and for the purpose specified.

And we also claim the application of the elastic band or connection to the carriage body, the wheel and the driving rein or reins, substantially in manner as specified.

And we also claim the combination of the safety strap, E, with the band, D, applied to or to be applied to the carriage wheel and rein or reins of the harness as specified.

68,601.—CAR BRAKE FOR STOPPING AND STARTING CARS.—George E. Burt and Edwin A. Hildreth, Harvard, Mass.

1st, We claim the spring case, a a', constructed in such a manner with pins, p p', and supporting flanges, that the spring may be wound in either direction substantially as described.

2d, The extension, c'', upon the disk, a, fitted into the case, a, on the axle as described and for the purpose set forth.

3d, The double case, a a', constructed as described and arranged to slide upon the axle and catch in stops, d d substantially as described and for the purpose set forth.

4th, The lever, B, with secondary lever, P, in combination with the case, a a', and operating the same.

5th, In combination with lever, B, and case, a a', the pawls, e e', springs, f f, and stops, g g', constructed and arranged substantially as described and for the purposes set forth.

6th, The construction of a car brake with mechanism substantially as described and so arranged that the friction of the wheel on the brake pad, H, shall tend to draw on the brakes and clamp the wheel between the brakes, G and H, substantially as and for the purpose set forth.

7th, In combination with the above, we claim the operating devices consisting of the lever, C, shaft, E, arms, j j, lever, l, and treadles, y y, substantially as described.

68,602.—ROTARY STEAM ENGINES.—Luman Carpenter, Oswego, N. Y.

I claim the combination of the piston, P, with the plate, G, crank, C, and cylinder H, so as to produce a rotary motion, substantially as herein set forth.

68,603.—ADJUSTING SPIRIT LEVELS.—Samuel N. Chapin and Augustus Stanley, New Britain, Ct.

1st, We claim a bed of vulcanized rubber, M, or equivalent elastic material arranged relatively to the adjusting screw, c, and to the adjustable leveling device, B or D, substantially as and for the purpose herein specified.

2d, Constructing the case, E, which carries the short glass, D, with a part, E', or its equivalent, standing at right angles to the glass, D, in combination with means for adjusting the same, operated at the edge of the body, A, substantially as and for the purpose herein specified.

68,604.—SAFETY STIRRUP.—Sam'l F. Clark, Middletown, Ct.

1st, I claim the combination of the bars, a, with the horizontal band, d, and the upright part, e, substantially as described.

2d, The combination of the pivoted sole, b, with the band, d, and sides, e, substantially as described.

3d, The combination of the bars, a, the band, d, the sole, b, and the upright sides, e, the whole forming a safety stirrup, substantially as herein described.

68,605.—COUNTING HOUSE RULER.—Daniel Webster Clegg, San Francisco, Cal.

I claim a ruler, A, having a concave bottom with graduated holes or openings, B B, substantially as specified and for the purposes set forth.

68,606.—APPARATUS FOR STOPPING RUNAWAY HORSES.—Samuel M. Cooper, Fairfax county, Va.

I claim the binding of the legs of the horses by the means of the above invention and the application of straps in combination with chairs and levers, operating substantially as and for the purpose set forth.

68,607.—CORN DROPPING ATTACHMENT TO HOES.—Charles W. Colton and Edmond L. Staples, Cincinnati, Ohio.

1st, We claim a seeding attachment to a hoe, consisting of the sliding

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receptacle or hopper, B, pocket, D', and brush, H, substantially as described and represented.

2d. The combination of the hoe, A, receptacle or hopper, B, tube, D, brush, H, pocket, D', adjustable gauge, t, and spring, L, all arranged and operating in the manner and for the purpose specified.

68,608.—DINNER PAIL.—S. B. Cox, Buffalo, N. Y.

1st, I claim the combination with the cover, C, and cup, D, of the grooved india rubber ring, K, the adjustable hinge, j, and spring catch, k, substantially as and for the purpose set forth.

2d, The combination with the pail, A, and cup, B, of the lugs or projections e and g, the socket, f, and spring catch, h, substantially as herein above set forth.

3d, The combination with the cup, D, and lamp, E, of the fender, F, supports, G G, and sockets, n n, substantially as set forth.

4th, The combination with the box, I, of the cover, b, and spring, c, substantially as and for the purpose set forth.

68,609.—GRADUATING ACCELERATING CARTRIDGES FOR ORDNANCE, &C., James M. Crockett, Newbern, Va

I claim the construction of the chambered cartridge in separate sections as fitted together at a b c and d, when arranged and combined as herein described and for the purposes set forth.

68,610.—LAND ROLLER.—H. L. Currier, Oregon, Ill.

1st, I claim the combination of the front roller, with the independent and loosely hinged hind rollers, arranged and operating as described.

2d, The combination with the front roller of the drivers seat and detachable tongue, all arranged and operating as described.

3d, The arrangement of the series of rollers, one behind the other, as described, for the purpose of successively rolling the same surface by a single passage of the machine.

68,611.—MACHINE FOR BURNISHING THE EDGES OF THE SOLES OF BOOTS AND SHOES.—Emory B. Cushing, (assignor to self and Albert R. Cushing,) Boston, Mass.

1st, I claim the standard, k, and the combination and arrangement of the machinery connected therewith, namely, the treadle, e, the shafts, F, o and s, and their gearing, whereby the hand and foot movements are secured, so that the boot or shoe will follow the burnisher, substantially in the manner and for the purpose above set forth.

2d, I claim the cross head, t, in combination with the screw, x, the rest. u, and the sliding arm, v, whereby any sized boot or shoe is held, and also whereby the motion following the burnisher is secured substantially in the manner and for the purpose above set forth.

3d, I claim the combination and arrangement of the clutches, f f' f'', with pulleys, g g', whereby is secured the change motion of the cross head, n, that the boot or shoe can turn from one shank to the other, substantially in the manner and for the purpose above set forth.

4th, I claim the combination and arrangement of the gauges or guides, e, with burnishing tool, d, which do not revolve with the burnishing combined and in connection with the cam movements in the sliding box, c, whereby the guides are adjusted to the edges of the soles, substantially as set forth.

5th, I claim the combination and arrangement of the cam groove, a, and the bent arm, b, working in the cam groove in the face of the pulley, D, whereby is secured the thrust or hand-like motion, substantially in the manner and for the purpose above set forth.

68,612.—BED BOTTOM.—R. H. Cutter, Cleveland, Ohio.

I claim the above described bed bottom as a new article of manufacture.

68,613.—COTTON AND HAY PRESS.—William Deering, Louisville, Ky.

I claim the shaft, S, with the fusee barrel, K, in combination with the rope, P, and sheaves, e and f, and the lower reten, H, arranged and proportioned in the manner and for the purpose described.

2d, The screw terminal, S2, upon the shaft, S, fitted into a female screw within B, in the manner and for the purpose described.

3d, The arrangement of the platens by which when operating the upper one is stationery and the lower one movable, in the manner and for the purpose described.

4th, The combination of the lever, M, with its ratchets and pawls, shaft, S, fusee barrel, K, screw, S2, rope, P, sheaves, e and f, upper and lower platens and box, A, in the manner and for the purposes described.

68,614.—ATOMIZING TUBE.—C. H. Eccleston, Oxford. N. Y.

I claim an atomizing instrument in which the contiguous air and fluid tubes are connected to the vertical or cup tube so as to be reversible with relation thereto, substantially as set forth.

68,615.—HARVESTER.—D. L. Emerson, Rockford, Ill.

I claim the drooping harvester frame, hereinbefore described, the droop at the grain wheel being produced by the bend of the bar of the frame and at the driving wheel by the branching of the frame, substantially as above set forth.

2d, I also claim the combination of the grain wheel with the frame of the machine by means of an arm so arranged as to permit the said wheel to turn horizontally a limited distance, substantially as set forth.

3d, I also claim the combination with a rake head of the tooth sockets rigidly secured thereto through which sockets the rake teeth project and moved endwise transversely to the rake head and held by punch screws, as described.

4th, I also claim the combination of the frame of the harvester and the draft bar thereof by a hinge hooked lifting lever, swinging standard and arm, substantially as set forth.

5th, I also claim the arrangement of the arm of the draft bar, the hooked lifting lever and swinging fulcrum standard, in such relative positions that the strain upon the lever tends to lock the members in their positions when the finger beam is raised beyond a certain distance.

6th, I also claim the combination of the frame of the harvester, draft bar, hooked lifting lever, perforated swinging standard, arm and pin, substantially as set forth.

7th, I also claim the combination of the frame of the machine and driver's seat with adjustable hanging stirrups, substantially as set forth.

68,616.—CLOTHES AND PICTURE HANGER.—F. M. Everingham, Collingwood, N. Y.

I claim the extension bar, A, the hook, B, the upright bar, C, and the dovetailed slot, D, in the upright bar when the same are constructed, combined, and used in the manner as substantially set forth and described.

68,617.—IRONING MACHINE.—Patrick G. Flanedy, San Francisco, Cal.

I claim, in combination with the lever frame, I, the cross head, K. the ways, J J, straps, K1 K2, and frame, L, substantially as and for the purposes described.

I also claim the lever, M, in combination with the slotted arm, N, shaft, O, pedal, d, and spring, c, substantially as and for the purposes set forth.

68,618.—REIN HOLDER.—B. S. Fletcher, Cornish, N. H.

I claim the combination of the plate, A, with its serrated ridges, e e, and the lever, D, with the revolving cam, C, either surrounding a hub, B, or inclosed within a case, B, as set forth, and arranged and operating substantially as and for the purpose set forth.

68,619.—RAILWAY CAR.—John Foreman, Pottstown, Pa.

I claim the combination described of the diagonal tie bolts, e e and f, with the longitudinal beams, posts and diagonal braces of the body of a car, for the purpose specified.

68,620.—BOX FOR TRANSPORTING STRAWBERRIES.—Henry C. Freeman, South Pass, Ill. Antedated Aug. 27, 1867.

1st, I claim the subdivisions of the drawer, as formed and described in the specification.

2d, The mode of opening each subdivision by a movable slide, b.

3d, The gate, as formed and described in the specification, also the mode of securing it by a spring catch, d.

4th, The whole in combination as above described and claimed in its parts.

68,621.—WOOD-BENDING MACHINE.—S. C. and E. O. Frink, Indianopolis, Ind.

1st, We claim the bed plate, P, and former, U U, when constructed as set forth.

2d, We claim the pin, g, the eccentric, R, shoe, N, and clamp, x d W, when used for taking up the slack of the spine.

3d, We claim the base piece, E, the back plate, k, the clamp, x d W, in combination with the strap, L, substantially as described and set forth.

4th, We claim the segments, Y Z, when constructed as described in combination with the strap, L, substantially as set forth.

5th, We claim the shoe, N, and clamp, a, in combination with the rod, b, substantially as set forth and described when used to hold the material in a bent position.

68,622.—DOOR LOCK.—H. R. Gillingham (assignor to himself, C. R. Gillingham and A. L. Huggins), Baltimore, Md.

I claim the combination and arrangement of the vertical sliding tumblers, P P, operated by the spring levers, L L, pivoted between the side bolt plates, G and H, the latter being held and secured by the spring pin, D, in both the locked and unlocked position of the bolt, substantially in the manner herein shown and described.

68,623.—DRIVING BIT.—David Hale, Boston, Mass.

I claim a driving bit having a bar covered with a removable tube of rubber or rubber compound, the bar being provided with a screw cap which permits application or removal of the tube, substantially as set forth.

68,624.—WASHER.—Joseph Hale, Somerville, Mass.

I claim for employment with wheels and axles, or similarly, washers of wood with the grain, substantially as described, when formed by softening, bending and drying.

Also the process described for forming washers of wood by bending a strip into a helix and then subdividing it, substantially as described.

68,625.—BELT TIGHTENER.—J. M. Hawley, Holton, Ind.

I claim a belt tightener consisting of the sliding rollers, C C, roller frames, B, windlass, D, and cords or chains, g g, applied to a frame, A, and operating substantially as described.

68,626.—WASHING MACHINE.—John Highbarger, Sharpsburg, Md.

1st, I claim the rocker, B, having the side pieces, B' B', slats, b b, rollers, R R, and seat, S, in combination with the corrugated wash chamber, A, substantially as and for the purpose specified.

2d, The combination of the rocker, B, with the cords, C, weights, W, and pulleys, P P, substantially as and for the purpose specified.

68,627.—ROCKING CHAIR.—Richard Hoffmann, N. Y. City

1st, I claim constructing the side frames of a rocking chair of elastic strips b b' c c', substantially as and for the purposes set forth.

2d, The combination of removable cross bars, a a1 a2, with the elastic side pieces, B C, of a rocking chair, substantially as and for the purpose described.

3d, The flexible back, E, in combination with the seat, D, top cross bar, a', and side pieces, B C, constructed and operating substantially as and for the purpose set forth.

4th, The yielding stops, e, in combination with the runners of a rocking chair, constructed and operating substantially as and for the purpose described.

68,628.—STOVE-PIPE THIMBLE.—Azariah Hutchinson, Monterey, Ohio.

I claim a fire-proof base for stove flues consisting of a bed plate, A, having a central aperture, B, and radial arms, C D E e, etc., when used in connection with the cylinder, H h H', for the reception of a stovepipe, the whole being arranged and operating substantially as herein explained and for the purpose set forth.

68,629.—SYRINGE.—Thomas Lewis, Malden, Mass.

I claim the removable perforated disk, c, with the male screw thread on its outer edge, adjusted to fit the female screw thread, b, substantially as described and for the purpose set forth.

68,630.—CUPPING INSTRUMENT.—Edward J. Leyburn, Lexington, Va.

1st, I claim the application to a cupping glass of a spurred disk, E, substantially as described.

2d, The use of an adjustable device for irritating the skin, in combination with a cupping glass, substantially as described.

3d, An irritator, E, constructed substautially as described and adapted for use in a cupping glass, substantially as described.

68,631.—TANNING.—George L. Loversidge, Bury Bank Cottages, Eng.

I claim subjecting hides to the action of the within-described ingredients, in the manner set forth.

68,632.—MEDICAL COMPOUND.—Wm. S. Lyon, Tranquillity, Ohio.

I claim the combination of the above-mentioned ingredients, substantially as described.

68,633.—MOLD FOR MAKING GLASS GOBLETS, GLASSES, ETC.—Joseph Magoun, East Cambridge, Mass.

1st, I claim the combination of the separate body matrix, L (in one piece as described), and its holding mechanism, or the equivalent thereof, with the series of stem mold, sections, G G G, arranged together and applied to them supporting frame so as to be movable in radial directions, as specified

2d, I also claim the combination and arrangement of the foot mold or matrix, B, with the separate body matrix, L (in one piece as described), and the stem mold sections, G G G, arranged so as to be movable in radial directions as specified.

3d, I also claim the foot mold or matrix, B, as made in one piece without any vertical joint, when arranged and combined with a series of stem mold sections, G, to open apart over the said foot mold, as specified.

4th, I also claim the combination for holding the body matrix, L, down to the mold sections directly underneath it, such combination consisting of the annular clamp, T, and its projections, o p, the stationary recessed posts, p, and the cams, m, such posts being supported by the platform, U, and the cams being applied to the body matrix, as specified.

5th, I also claim the combination and arrangement of the cammed annulus, o, with the mold frame, the series of stemmed sections, G G G, the body matrix, L, and its holding mechanism, substantially as described.

6th, I also claim the combination of the lower plunger, C, and its supporting foot, D, with the raising plate or device, E, so as to render the latter capable of being revolved independently of the said plunger and foot, as explained,

7th, I also claim the combination of the edge forming annulus or cap, M, with the body matrix, L, and its holding mechanism, whether the latter be applied directly to the matrix or to the said annulus placed on the said matrix.

8th, I also claim the combination of the finger, y, and notched projection, Z, with the mold frame, and the body matrix, L, when the latter is combined and arranged with a series of stem mold sections, G G G, to operate or move in radial directions, as described.

68,634.—BAGGAGE LABEL.—J. M. March, Washington, D. C.

I claim securing the label of baggage or freight cars, trunks, or other baggage parcels which can be shifted only by the proper person when applied to baggage or freight cars and from the inside when applied to trunks and other baggage parcels.

68,635.—PLOW.—Thomas March, Dallas, Mich.

I claim the method herein described of constructing the mold board and land side of a plow, substantially as described.

68,636.—MODE OF OPERATING WINDOW SHUTTERS.—Wm. C. Marshall, New York City.

I claim the pivoted latches, D, extending through the wall one end operated by the tappet rod, E, the other end holding the self-closing shutter, C, substantially as shown and described.

68,637.—BABY JUMPER.—A. H. Mason, Binghamton, N. Y.

I claim the combination of the standard, B, and arm, E, with the sockets, C C and D, the swivel, F, hoop, O, saddle, H, and waist coat, I, all constructed substantially as described for the purpose set forth.

68,638.—POST HOLE AUGER.—Samuel McCray, Woodstock, Ill.

I claim the shaping the cross plate so as to receive the wings in a position inclining about eleven degrees from a right angle to the rod also the projections upon the forward outer points of the wings.

68,639.—MAKING BUTTER.—Mrs. D. H. McGregory, Detroit, Mich.

I claim the herein described way of making butter by the employment of the materials above specified, producing thereby a new article of manufacture.

68,640.—SAFETY ATTACHMENT FOR WATCH CHAINS.—Louis Mendel, Albany, N. Y.

I claim a projecting point or pin applied to a watch chain as a safety attachment, in the manner described and for the purposes herein set forth.

68,641.—LEATHER HOSE.—Chas. F. W. Meyer, Oconomowock, Wis.

I claim uniting the pieces, constituting a leathern hose pipe, by a lapped seam sewed with leather thongs, in the manner herein described.

68,642.—HARVESTER.—W. K. Miller (assignor to C. Aultman & Co.,) Canton, Ohio.

I claim, in combination with the grain table, or platform, the bail, I, working in connection therewith, for the purpose and in the manner substantially as herein set forth and described.

68,643.—CULTIVATOR.—G. Moore (assignor to John Deere, C. H. Deere, S. H. Velie, and G. W. Vinton), Moline, Ill.

1st, I claim the axles, B, constructed substantially as herein shown and described, for the attachment of the plows and wheels of a cultivator, as set forth.

2d, I claim the double-acting clevis or device for attaching the plows to the axle, said device consisting of the plates, n c and m, and bolt, o, all constructed and arranged to operate substantially as described.

3d, I claim the plate, h, when constructed and used in connection with the standard, G, and brace, d, substantially as described.

4th, I claim the cultivator having its several parts constructed and arranged for joint operation, substantially in the manner and for the purpose herein set forth.

68,644.—HINGE.—James A. Morrell, Chicago, Ill. Antedated Aug. 26, 1867.

I claim the eccentric, B, in combination with the wing of the hinge, m, substantially as described and for the purpose set forth.

68,645.—BED BOTTOM.—Robert B. Nevens (assignor to himself and Stillman Bushee), Lowell, Mass.

1st, I claim the adjustable sliding stirrups, D, or their equivalent, applied to the side rails, E, and spring bars, A, and arranged for action and effect, substantially in the manner and for the purpose set forth.

2d, And in combination with the stirrups, D, I claim the knees, F, or the equivalent thereof, when applied and arranged substantially as and for the purpose set forth.

3d, And in combination with the stirrups, D, and knees, or equivalent, I claim the spring bars, A, applied and arranged in the manner and for the purpose substantially as specified.

4th, And in combination with the stirrups, D, and knees, F, and spring bars, A, I claim the employment of transvers bars, B, and a series of slats, C, in in the manner and for the purpose set forth.

68,646.—RUNNING GEAR FOR VEHICLES.—B. F. Paine, Roseville, Ill.

1st, I claim the bed plate, g, in combination with the arm, H, axle, N, and spindle, X, constructed as described and for the purpose set forth.

2d, The jointed tongue, B, pivoted to the bed, as described.

3d, The rod, M, in combination with the rods, R, tongue, B, and axle, N, substantially as described and for the purpose set forth.

68,647.—INSTRUMENT FOR OBLITERATING STRICTURES IN DUCTS OR NATURAL PASSAGES FOR ANIMAL FLUIDS.—Geo. N. Palmer, Greene, N. Y.

I claim the sheath or cone-pointed tube, A, sliding rod, D, knob, E. and guide pin, e, as constructed and arranged, in combination with the pivoted blades or lancet points, f f, for operating in the manner as and for the purposes herein set forth.

68,648.—CORN CULTIVATOR.—Wm. H. Parlin, Canton, Ill.

I claim the strong, durable, and economical frame or attachment between the tongue and axle or wheels, as secured by the simple bars, A, in manner and form as shown, or in any similar form, upon the same principle.

I also claim the extension hooks, k k, in the beam holder, C, substantially as above described, and as in drawings shown, or any similar hook, in similar connections, and for the uses herein described.

68,649.—AUTOMATIC SELF-CLOSING BARREL FILLING APPARATUS.—W. S. Payne, Petroleum Center, Pa.

1st, I claim the combination of the tubes, A1 and B, jointed at D, with the vertical tubes, E and G, the valve, E1, valve rod, e, handle, F, rod, g, stop, H, spring, I, and trigger, P, substantially as and for the purpose specified.

2d, The combination of the float, K, rod, L, lever, M, pitman, N, lever, O, trigger, P, cord, R, and weight, T, substantially as and for the purpose specified.

68,650.—HOSE COUPLING.—D. T. Perkins and C. F. Hovey, Springfield, Mass.

1st, I claim the fixed ears or inclined lugs, E E, formed upon the parts of a hose coupling, for interlocking and holding such parts in contact, substantially as described.

2d, A hose coupling formed of the part, A, and duplicate part, A1, each having two ears or inclined lugs thereon, as described, in combination with the slotted keys, K, pins, e, and key seats, the whole constructed and operating substantially as set forth.

3d, The method of applying packing to a hose coupling by means of the channels, f n f, and packing, p, inserted therein, substantially as set forth.

68,651.—ANIMAL TRAP.—Samuel S. Rain, Lowville, N. Y.

I claim the use of the suspended cage, I, attached to the cross bar, C, together with the pendant, F, and the lock, 1 2 3 4 5 K, as herein described.

68,652.—BOOT AND SHOE SHANK.—Andrew Jacob Rice and Andrew James Rice (assignors to Andrew Jacob Rice), Salem, Mass.

We claim, as an article of manufacture, a shank made of leather and steel, secured together by rivets, all substantially as described.

68,653.—FIREPLACE.—Edward Y. Robbins, Cincinnati, Ohio.

1st, I claim making the general front of the grate concave throughout its hight so as to form a highly heated channel of draft for smoke and dust of ashes, entirely within the fire place, and up through the entire hight of the grate, and also to secure cross radiation for the purpose of keeping the front of the fire bright, substantially as set forth.

2d, I claim a grate composed of or containing a series of two or more such concavities or recesses.

3d, I claim, in certain cases, constructing the grate concave in the front lines of its vertical as well as of its horizontal sections, for the purpose of securing a greater amount of cross radiation, *i. e.*, up and down, as well as from side to side, thus increasing the brilliancy and incondescence of the front of the fire and causing it to radiate more heat into the room, substantially as above set forth.

4th, In combination with a grate with its main front shaped into such a recess or recesses, I claim making the fire back parallel, or nearly parallel with the general front of the grate, substantially as above set forth.

5th, I combination with a grate of the above shape, and set as above described, with shallow coal space, from the front bars backward to the brick fire-back, I claim the use of a canopy, either horizontal or arched, over the back part of the fire, and coming forward to within a few inches of the arch of the fireplace or mantel.

68,654.—SLIDE REST FOR LATHES.—J. G. Rominger (assignor to himself and J. F. Johnson), Philadelphia, Pa.

I claim the combination and arrangement of the plate, A, the worm wheel, b, confined therein, and secured to the short spindle, a2, of the bed, B, of a slide rest, and the worm spindle, c, all as set forth for the purpose specified.

68,655.—CHURN.—H. D. Rumsey, Homer, N. Y.

I claim the bellows, B, in combination with the pipe, D, and arms, F, the latter being provided with the orifices, d, in the manner and for the purpose described.

68,656.—HOSE COUPLING.—Oliver Salgee, New York city.

I claim a hose coupling formed with inclined or cam flanges upon one part of the coupling, in combination with a movable ring surrounding the other part of the coupling, and provided with lugs, taking over said inclined flanges in the manner specified, to bring the surfaces of the couplings together, as set forth.

68,657.—FIREBOX FOR FORGES.—Henry Sayler and Jeremiah Bair, St. Paris, Ohio.

1st, We claim the fire pan, A, having the double walls, and otherwise constructed as herein shown and described.

2d, In combination with the pan, A, made as described, we claim the pipes, C D, connecting it with the reservoir, B, when arranged to operate as set forth.

68,658.—GATE.—Calvin Shepard, Binghampton, N. Y.

I claim the lever catch letter B, and the ready fastener letter C, as shown in the combination.

68,659.—CHAIR AND DESK.—C. B. Sherman, Troy, N. Y.

I claim the combination of the chair, A, desk or table, B, with the arm, C, and ball and socket joint, D E, each being constructed, arranged, and combined substantially in the manner and for the purposes herein fully described and set forth.

68,660.—SCHOOL DESK AND SEAT.—Henry M. Sherwood, Chicago, Ill.

I claim the arm, C, provided with the socket, m, and the shoulders, n and n', in combination with the arm, a, provided with the stud, f, and stop, g, when constructed and arranged for joint operation substantially as described.

68,661.—PAINT FOR WOOD, METAL, AND WOVEN FABRICS.—C. D. Smith, Chicago, Ill.

I claim the paint prepared out of ingredients and in the manner herein described, and of any color, to be applied to wood, metals, and woven fabrics, substantially as herein set forth.

68,662.—CULTIVATOR.—Perry W. Smith, Abingdon, Ill.

1st, I claim the combination of frame pieces, A A, bars, D D D D, knuckles, E, and adjusting bars, O O, substantially as described and for the purpose set forth.

2d, The vertical adjustment devices, bars, O O, and knuckles, E E E E, substantially as described and for the purpose set forth.

3d, The metallic uprights, D D D D, arranged as described and for the purpose set forth.

68,663.—STEAM GENERATOR.—J. N. Snowdon and H. Wilkins, Brownsville, Pa.

We claim the arrangement of a series of zigzag or coiled feed-water pipes in the heating chamber, y, of the rear end of a steam boiler, substantially as and for the purposes set forth.

68,664.—MATERIAL FOR FLOORS OF MALT KILNS.—Reinhard Speidel, New York city, assignor to the Clinton Wire-Cloth Company, Clinton, Mass.

I claim, 1st, The pressing and rolling of wire cloth in the manner and for the purpose described.

2d, The application of rolled or pressed wire cloth as a bottom to malt kilns in the manner and for the purpose described.

68,665.—SORGHUM EVAPORATOR.—Ebenezer Sperry, Miami Village, Kansas.

I claim the boiler, A, when its bottom, a a1, is constructed as herein described and set forth.

2d, I claim the combination and arrangement of the boiler, A, the elevators, B B1, and troughs, B2, substantially as and for the purpose described.

3d, The arrangement of the cleanser, D D1 D2, substantially as and for the purpose set forth.

4th, The sinks, E, with or without the sub sinks, E2, substantially as and for the purpose set forth.

5th, The arrangement and combination of the stand-pipe, B4, and elevator, B3, substantially as set forth.

6th, The combination of the pipes, f2 and f3, with the cooler, F F2 F3, substantially as set forth.

7th, The arrangement and combination of the corrugated cylinders, g4, with the exterior casing, g3, and the pipes, G g, as set forth.

8th, The combination of the hot-air chamber, h3, with the finishing chamber, h4, and drying chamber, H, arranged substantially as set forth.

68,666.—COMBINATION APPARATUS FOR CARBURETING AIR.—Levi Stevens, Fitchburg, Mass.

I claim the combination of the cups, g g, with the tubular arms, g1 g1, attached to the revolving shaft, D, so as to rotate with it and bent at their inner extremity so as to discharge their fluid contents into the chamber, A', all constructed, combined, and arranged substantially in the manner and for the purpose set forth.

68,667.—ANTI-FRICTION JOURNAL BOX.—Henry T. Stith, Stanton, Kansas.

I claim the box, A, and ring, B, in combination with rollers, C, all constructed, arranged, and applied in the manner and for the purpose substantially as set forth.

68,668.—BEDCLOTHES CLAMP.—Alfred Storm. Rutland, Vt.

I claim the clasp constructed with a frame, B, and jaws, C D, operated substantially as described.

2d, The jaw, D, arranged so as to be adjustable to varying sizes of bed rails substantially as described.

68,669.—REFINING PETROLEUM.—F. Sylvester, N. Y. city.

1st, I claim refining and purifying petroleum oil by passing it through hot water, substantially as described.

2d, Refining and purifying petroleum by washing it in hot water and macerating with bone black, or its equivalent, substantially as described.

3d, The devices herein shown, whereby the water is heated and circulated, and the oil forced through the hot water, substantially as described.

68,670.—CORN PLOW.—John R. Thomas, Mifflintown, Pa.

1st, I claim the plow points, d d, having the form above described, substantially as and for the purpose specified.

2d, The method of adjusting the direction of the plows, above described, by means of the bolts, G G, the braces, F F, and the holes, i ii, passing in different directions through the side beams, B B, substantially as and for the purpose described.

3d, The washers, H H, substantially as and for the purpose specified.

68,671.—CEMENT.—D. B. Tooly, Albion, N. Y.

I claim a cement composed of the ingredients above mentioned in about the proportions set forth.

68,672.—VALVE GEAR FOR STEAM ENGINES.—H. Uhry, New York city.

1st, I claim the collars, e g, in combination with the rod, f, and tubular valve stem, b, substantially as and for the purpose described.

2d, The cam slide, i, in combination with the collars, g e, rod, f, and tubular valve stem, b, substantially as and for the purpose set forth.

3d, The roller, j, connected to the governor spindle, l, in combination with the cam slide, i, collars, g e, rod, f, and tubular valve stem, b, substantially as and for the purpose set forth.

68,673.—GANG PLOW.—H. J. Wattles, Rockford, Ill.

1st, I claim the combination and arrangement of the plowing frame, B B, wheels, H H', caster wheel, F, frame support, E, chains, I J J', with crank, f, operating substantially as described and for the purpose set forth.

2d, The combination and arrangement of the wheel, H', with the sliding support, K, groove piece, L, segment lever, M, spring stop, h, with stationary segment, k, when constructed and operating as described.

3d, In combination with the chain support, I J J', the arrangement of the spring pawl, e crank, f, and ratchet wheel i, operating substantially as described.

4th, The combination of the stubble turner, N, with a plowing mechanism, as described.

5th, Attaching the team to the plowing mechanism by the levener, O, and the chains, P P, being of unequal length, the whole arranged to draw directly upon the plows in such manner as to avoid all side draft, substantially as described.

68,674.—WIND WHEEL.—L. H. Wheeler, Beloit, Wis.

1st, I claim the flexible regulating vane, J, operated by the weights, cords and pulleys substantially as described, in combination with the side vane, O for the purpose set forth.

2d, The vane, J, constructed with the braces, K K, stops, Y', and strap, Y as and for the purpose set forth.

3d, The hollow shaft, D, in combination with the flexible vane, J, cords, H H, and connecting rod, S, so that said cords and connecting rod may not influence the action of the vanes, Q, and the supporting frame, as set forth and described.

68,675.—FILTER.—Wm. H. Wiley, Fredonia. N. Y.

I claim a water filter having a hollow, porous cylinder, A, in arrangement with the inverted cup, B, for the purpose and substantially as described.

68,676.—WASHING MACHINE.—A. T. Williamson, La Crosse, Wis.

1st, I claim the combination of the sleeve elbows, F, having recesses conforming to the shape of levers, B, and washers, i k h, arranged substantially as and for the purpose set forth.

2d, The combination of back board, L, having wings, m, in combination with the recessed washer, i k h, sleeve elbows, F, levers, B, and the double links, E D, arranged substantially as and for the purpose set forth.

68,677.—CLASP FOR HOOP SKIRTS.—Samuel R. Wilmot, Bridgeport, Conn., assignor to the Colby Skirt Company.

I claim the combination in hoop skirts of the following parts or devices for connecting the ends of diagonal hoops, B, to the edges of horizontal hoops, A, to wit, a metallic or other strap, C, attached to a horizontal hoop, and perforated where the strap projects beyond the edge of the hoop, and a strap, E, attached to the end of a diagonal hoop, and jointed to the strap, C, when the said straps are so constructed and arranged that the end of joint, G, of strap, E, after it is attached to strap, C, is permanently secured to the diagonal hoop by being confined beneath the flanges, F F, of strap, E, substantially as above set forth.

68,678.—CORN CULTIVATOR.—Marmaduke Wilson, Marquette, Wis.

1st, I claim the levers, H and I, used in combination with the tongue, G

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and cross bars, B B', of a cultivator frame, arranged and operating substantially as and for the purpose set forth.

2d, The combination of the standards, C C C C, with the frame, A A B B', and braces, E E, as and for the purpose set forth.

3d, The clevis, o, attached to the cross bar, B, in combination with the adjustable tongue, G, and levers, H I, substantially as and for the purpose set forth.

68,679.—CULTIVATOR.—Wm. B. Young, Chicago, Ill.

1st, I claim the combination in a straddle-row cultivator, of the main frame, split tongue, jointed plow beams, and wheels.

2d, the combination of wheels and jointed plow beams in a straddle-row cultivator, the beam on each side having its joint or point of attachment out of the line of motion of its set of plows.

3d, The combination in a straddle-row cultivator of wheels, doubletrees, whiffletrees, jointed plow beams, and frame, when the plow beams are jointed forward of the whiffletrees.

68,680.—RIVETING MACHINE.—John Adt, Wolcottville, Conn.

1st, I claim the two hammers, D, so combined and operated as to simultaneously strike the two ends of the rivet in heading the same, by means substantially as herein set forth.

2d, The combination with the reciprocating hammers, D, of sleeves, C, and springs, e* g*. the whole arranged to operate substantially as and for the purpose herein set forth.

3d, The combination of the cam wheels, C*, and carriages, B, with the reciprocating hammers, D, constructed and operating substantially as and for the purpose herein set forth.

4th, The adjustable stop plates, F, in combination with the carriages carrying the riveting hammers, substantially as and for the purpose herein set forth.

68,681.—SELF-REGISTERING THERMOMETER.—Martin Ames, New Ipswich, N. H.

1st, I claim the independent needles, r w, in combination with the thermometer needle, n, arranged and operating as and for the purpose described.

2d, The combination of the hollow shaft, b, the pin, s, the needle, n, and the metallic ribbon coils, d d1 d2, constructed, arranged and operating as herein shown and described.

68,682.—CUT-OFF FOR WATER CONDUCTORS.—E. B. Armstrong, Columbus, Ohio.

1st, I claim the revolving cut-off, C C', in combination with the external casing, A, and extension pipes, B and B', substantially as and for the purpose set forth.

2d, The combination and arrangement of the casing, A, pipes, B and B', internal intermediate partition, A', cut-off, C C', and internal pipe, D, substantially as described.

3d, The combination of the casing, A, pipes, B and B', cut-off, C C', handle, C2, and spring, E, substantially as described.

68,683.—HORSE HAY FORK.—J. H. Arnold, Troy, Pa.

1st The sliding tine, C, and locking catch, D, in combination with the main tines, A B, substantially as and for the purpose specified.

2d, The guard, d, in combination with the tines, A B, substantially as and for the purpose herein set forth.

3d, The recess, s, and stud, c', of the sliding tine, arranged in relation with the strap, c, and locking catch, D, substantially as and for the purpose specified.

68,684.—GATE.—H. F. Balschmiter, Davenport, Iowa.

I claim the gate, C, when provided with the rolling weights, E, in the manner and for the purpose specified.

68,685.—PERMUTATION TRUNK LOCK.—Henry Basch, Chicago, Ill

I claim the combination of the grooved slats, a a and d d, grooved rails, F F', and hinged plate, K, with sliding T-shaped notched bars, B and G G, and slots, D and H H, constructed as described, the whole arranged and operating substantially as and in the manner herein set forth and for the purpose specified.

68,686.—PROCESS OF VAPORIZING HYDROCARBON LIQUIDS.—John A. Bassett, Salem, Mass.

I claim vaporizing hydrocarbon oils for heating purposes by a bath of melted metal, in the manner substantially as set forth.

68,687.—CONDUCTOR'S TICKET PUNCH.—Jacob Beck, Philadelphia, Pa.

1st. I claim the concentric bearing rings or flanges, f g, of the joint, F, substantially as described for the purpose specified.

2d. The inclosed coiled spring, G, of the joint, F, substantially as described for the purpose specified.

3d. The seat, E, in combination with the spring, C, substantially as described, for the purpose specified.

4th, The spiral spring encircling the stripper, a, substantially as and for the purpose described.

5th, The construction of the joint consisting of the circular parts, d, and corresponding parts, d', of the jaws and handles, substantially as described.

6th, The combination of the flexible cushion, D, and spring, C, applied to the stripper, a, substantially as described for the purpose specified.

68,688.—CATAMENIAL GUARD AND SUPPORTER.—John A. Belvin, Jr., Baltimore, Md.

1st, I claim the combination of the front, back, and middle parts, A B C, the elastic straps, D and E, and the sponge, F, when constructed and arranged substantially as described for the purpose specified.

2d, The absorbent, consisting of the flat pieces of sponge, F, jointed together and conforming to the shape of the middle part, B, in combination therewith and with the front and back pieces, A and C, substantially as described for the purpose specified.

68,689.—ROTARY PLOW.—Henry Berkstresser, Quaker Bottom, Ohio.

1st, I claim the plows, e e, fitted upon the periphery of the wheel, E, constructed and arranged as shown and described, as and for the purpose specified.

2d, The combination of the wheel, E, with the tilting frame, A, the draft pole, F, and the lever, d, arranged and operating substantially as and for the purposes set forth.

68,690.—HORSE HAY FORK.—M.D.Birge, Grands Rapids, Mich.

I claim the spiral fork, A, when fitted in a frame or plate, B, and when connected by means of gear wheels, or their equivalents, with a drum, D, in combination with the catch, F, all made and operating substantially as and for the purpose herein shown and described.

68,691.—HORSE POWER.—Jacob Bish, Dayton, Ohio.

I claim the boss, o, of the frame, A, and the corresponding cavity of the frame, B, and the relation of the bolt, D, to the same, in the manner substantially as described and for the purpose specified.

68,692.—GATE FOR WATER WHEELS.—Chas. D. Blakeslee, Grand Rapids, Mich

1st, I claim the cylindrical valves, D, revolving against each other and having apertures, G G, substantially as and for the purposes described.

2d, In combination with the above I claim the curb, A, provided with the aperture, B and C, as and for the purpose specified.

68,693.—HORSE RAKE.—Isaac W. Boatman, Seven Mile, O.

I claim the frame e f g, with its handle, h, provided with hinged links, o o, in combination with the fixed pins, k k, and removable pins, m m, whereby the rake is made convertible for the purpose of raking stalks or hay, in the manner described.

68,694.—DOOR FOR GRAIN CARS.—S. E. Bright, Elkhorn, Wis.

I claim the sliding door for grain cars, put on the outside or inside of a car, consisting of two sections, B and C, in combination with tracks, t t', said sections constructed and operating substantially as herein described and specified.

68,695.—MACHINE FOR WEAVING BASKETS.—F. H. Brown, Chicago, Ill., assignor to himself, Edward F. Peugeot and Lemuel H. Flershiem. Antedated March 10, 1867.

I claim, 1st, The coil spring, O, in combination with the shaft, C, nut, P, and spring, v, or their equivalents, for the purpose of moving the form, D, backward regularly and for adjustment substantially as set forth.

2d, The oscillating frame, A, in combination with the basket form, D, and weaving devices, substantially as and for the purpose set forth.

3d, The yoke, B, in combination with the shafts, C C', for the purpose of holding or clamping the form, D, as specified.

4th, The feed bar, M, in combination with the separator, I I', substantially as described and set forth.

5th, The guide, H H' H'', substantially as and for the purpose specified.

6th, The fork, I I', as and for the purpose specified.

7th, The weaving wheel, L, in combination with the separator, I I', when constructed to separate and keep the uprights, E E etc., in position to receive the filling, Y, as set forth.

8th, The controlling band, F, constructed as described as and for the purpose set forth.

9th, The peculiar construction of the shank, 7 and 8, forming the opening, K, as and for the purposes set forth.

10th, The frame, U, carrying the weaving devices, and pivoted so as to turn about a center, as and for the purposes set forth.

68,696.—MILK AND OYSTER CAN.—John Buckley, Baltimore, Md., assignor to Thomas J. Logan, Washington, D. C.

I claim the tube, F, resting on the concave bottom, B, of the can, A, and extending to the top of the can, being held in position by means of the pressure of the cover, D, and prevented from moving laterally by means of the downward extending rim, E, on the cover, D, substantially as described.

68,697.—DITCHING PLOW.—W. R. Clark, Indianola, Ill.

I claim the foot piece, B, having its forward end made forked to incline the dirt and other obstruction toward the center, in combination with the brace bars, E F C and D, side elevators, G H, and side wings, J K, substantially as described for the purpose specified.

68,698.—MACHINE FOR GRINDING LATHE ARBORS.—Charles Coester, Jr., and A. R. Lawther, Bridgeport, Conn.

We claim the extension plate, I, and supporting plate, I, pivoted together in combination with the adjustable supports, S C, and spring, V, tool holder, A, grooved bed, D, having shank, B, sliding carriage, E, friction pulleys, L H F, and grinding wheel, R, whereby the angle at which the grinding wheel is applied to the mandrel is adjusted, substantially as described for the purpose specified.

68,699.—DRAFT NECK-YOKE.—Ambrose B. Coleman, Lynd-ville, N. Y.

I claim the whole of the improved draft neck-yoke as herein described in this specification as and for the purpose set forth.

68,700.—CAR BRAKE.—Thomas B. Comins, Jr., Lowell, Mass.

I claim the eccentrics, G, attached to the ends of the shoe bars, substantially in the manner and for the purpose herein shown and described, the said eccentrics being free to turn on their pivots and weighted substantially as and for the purpose herein shown and described.

2d, The spring, F, in combination with the shoe bars, E E', and eccentrics, G, all made and operated substantially as and for the purpose herein shown and described.

68,701.—CAR BRAKE.—Thomas B. Comins, Jr., Lowell, Mass.

1st, I claim the eccentric, G, when secured to the ends of the shoes, F, substantially as herein shown and described.

2d, The construction and arrangement of the vertical springs, a, supporting the shoe bar, E, horizontal bar, e e, lever, d, and spring, g, between the outer head of the bolt, f, and shoe bar, E, as herein set forth for the purpose specified.

68,702.—APPARATUS FOR VAPORIZING AND BURNING LIQUID HYDRO CARBONS.—Frederic Cook, New York City.

1st. I claim the steam and oil pipes, L and N, having the connecting valve, V, for the purpose specified.

2d, A combination chamber for burning liquid hydrocarbons, made of fire clay or its equivalent, in sections or staves, in the manner and for the purpose as shown and described.

3d, The inverted chamber or hood, k, when arranged for the purpose and in the manner shown.

4th, In the apparatus for burning liquid hydrocarbons, the arrangement respectively of the steam pipe, L, and oil pipe, n, for the purpose of volatilizing the lighter portions of the oil by the heat of steam.

68,703.—VAPORIZING AND BURNING LIQUID HYDROCARBON.—Frederic Cook, New York City.

1st, I claim a retort or vaporizing chamber for oil burning furnaces the upright portions of which are made of water legs or pipes communicating with the boiler, and the bottom of iron fire clay or other suitable material as a vaporizing surface, substantially as shown and described.

2d, In an apparatus for vaporizing and burning hydrocarbon liquids, I claim a retort or chamber having a removable bottom plate as set forth.

3d, The retort or vaporizing chamber suspended from the boilers substantially in the manner specified and shown.

68,704.—APPARATUS FOR BURNING PETROLEUM AND FLUID MADE THEREFROM.—Frederic Cook, New York City.

I claim the use of plates and deflectors or either of them within the retort thereby forming compartments therein for the purpose of retarding the flame and producing a more perfect combustion.

The use of retorts having perforations for the admission of air in combination with the flats or compartments substantially as described for the purposes set forth.

I claim the construction and arrangement of the oil supply pipe, H, with its connections. The cooler, H', and the regulating valves, J Y, substantially as described.

I claim protecting the oil feeding pipes and apparatus from the heat of the furnace by the fire clay tile or other suitable material substantially as described.

I claim the general construction of the apparatus described and shown.

68,705.—METHOD OF USING LIQUID HYDROCARBON AS FUEL.—Frederic Cook, New York City.

1st, I claim producing the requisite pressure in the oil tank by means of the steam pressure in the boiler substantially as described.

2d, In an apparatus for burning petroleum or other inflammable oils, I claim forcing the oil into the furnace by means of artificial pressure in a supply tank substantially such as is herein described, said pressure being created in any of the modes herein mentioned.

68,706.—APPARATUS FOR BURNING PETROLEUM AS FUEL.—Frederic Cook, New York City.

1st, I claim in a furnace for burning petroleum or other liquid hydrocarbons as fuel the feeding apparatus connected with, and arranged as a part of the furnace door.

2d, The employment of a cutter or cleaner for the purpose of cleaning the oil pipe substantially as set forth.

3d, The arrangement of the deflecting till, W, when used for the purpose and in the manner substantially as described and shown.

4th, The air distributing tiles when perforated and arranged substantially in the manner as described.

68,707.—METHOD OF BURNING HYDROCARBON OILS AS FUEL.—

1st, I claim the arrangement substantially as described by which water is applied and evaporated by the plates, Q Q, or other equivalents when used for this purpose substantially as set forth.

2d, The cap, M, arranged within the cup, G, and perforated as described so that air may be forced through it for the purpose and in the manner specified.

3d, The pipe, N, arranged as and for the purpose described, in combination with its two connections one with the steam space, and the other with the water space of the boiler.

4th, In combination with the air chamber, J, I claim the air pipes, K, through the water legs of the boiler for the purpose of introducing air into the furnace substantially as described.

68,708.—PROCESS OF VAPORIZING AND DECOMPOSING HYDROCARBON LIQUIDS IN THE PRESENCE OF STEAM.—Frederic Cook, New York City, and John A. Bassett, Salem. Mass.

1st, We claim in an apparatus for decomposing hydrocarbon oils with steam the arrangement and construction of the apparatus shown having the several parts or their equivalents arranged and operating together in the manner and for the purpose specified.

2d, The process herein described whereby hydrocarbon oils and steam are decomposed simultaneously into gases, and used in the production of heat as set forth.

68,709.—MACHINE FOR MAKING CHAINS.—Josiah Copley, Jr., Alleghany City, Pa. Antedated Aug. 12, 1867.

1st, I claim an improved machine for forming links for chains that shall grasp the iron supplied to it from the link, cut the scarf, and give the desired overlap for welding, and continue to feed up the iron until it is entirely expended in forming links constructed, arranged and operating substantially in the manner herein described and set forth,

2d, The combination of the collar, a, mandrel, c, rib, s, constructed, arranged and operating substantially as herein described and for the purpose set forth.

Also the support, y, or its equivalent when used for supporting the mandrel operated by means and in the manner substantially as herein described and set forth.

Also the combination and arrangement of the springs, B1 and B2, rod, w, spring clamp, J, feed guide, x, and piece, k, constructed, arranged, combined and operating substantially in the manner herein described and for the purpose set forth.

Also the combination of the shrouds, C', cross piece, J', and latch, R2, when used in connection with the wheels, D and D', as herein described and for the purpose set forth.

68,710.—SNAP HOOK.—Enoch Covert, Farmer Village, N. Y.

I claim the spring, C, applied to the top of the closing bar, B, and secured in position by means of the lips, b, whereby the introduction of dirt beneath the spring is prevented and said spring adapted to be removed from the hook, A, without removing the closing bar as herein shown and described.

68,711.—WATER ELEVATOR.—J. W. Crannell. Yorkville. Mich.

I claim the combination of the loose flanged drum, D, and attached rope and bucket with the crank shaft, S, clutches, o o, shifting brake lever, L, pivot stud, G, and hook, H, arranged, constructed and operated, substantially as and for the purpose herein specified.

68,712.—EXPANSIBLE HOSE NOZZLE.—Chas. Crook, Yonkers, N. Y. Antedated Sept. 4, 1867.

I claim the combination of the duplex inner tube with the split nozzle, substantially as shown and described.

Also in combination therewith the means of adjustment substantially as shown and described.

68,713.—STEAM ENGINE SLIDE VALVE.—Wayne Curry S, Springfield, Mass.

I claim the valve, D, having the vertical ports, F F', in combination with the valve case, A, the packing ports, a and a, and a spring, n, all constructed and operating substantially as described and for the purposes herein specified.

68,714.—CHAIN CLASP FOR HANDLING HOGS IN SLAUGHTERING.—P. W. Dalton, Jersey City, N. J.

I claim the slotted plate, A, the key, B, the rings, f g, and the chain, c, constructed and arranged substantially as herein shown and described for the purpose specified.

68,715.—LINING OR "FIX" FOR PUDDLING AND BOILING FURNACE—Samuel Danks, Cincinnati, Ohio.

I claim the use of puddlers or boilers tapping cinder, squeeser, cinder or hammer cinder, and pulverized iron ore when mixed with an alkali, or alkalies such as lime, common salt, soda or potash separately or combined for lining or fixing puddling or boiling furnaces.

68,716.—KILN FOR BURNING CLAY PIPES.—John Dimelow, (assignor to himself T. P. Stuard, and J. Stuard, Philadelphia, Pa.

1st, I claim a kiln having fire places, a, a chimney, C, and rings, i, or their equivalents, the whole being so arranged that the products of combustion in their passage from the fire places to the chimney must pass both through and around the pipes, m, resting on the said rings for the purpose specified.

2d, The ribs, h h, rings, i i, and bridge, f, arranged within a kiln in respect to the fire places and chimney substantially as and for the purpose set forth.

68,717.—SHIFTING RAIL FOR BUGGY SEAT.—Caspar Disser, West Union, Ohio.

I claim the combination of a carriage seat and rail when constructed and provided with hooks and catches substantially as and for the purpose specified.

68,718.—RIDING ATTACHMENT FOR PLOWS.—Lorenzo Doming, Ottawa, Ill.

I claim the attaching of the plow to the draft pole, A, of the riding attachment through the medium of the bell crank, J, rods, I B, and lever, M, or their equivalents for raising the front end of the beam in connection with the suspended rack, R, and the bar, P, jointed or hinged to the draft pole, A, and connected with the plow beam by the stirrup, O, substantially as and for the purpose specified.

2d, The cam, S, on the axis or fulcrum pin of the lever, L, in combination with the suspended rack, R, and fixed pawl, b, all arranged substantially as and for the purpose set forth.

3d, The axles, B B', projecting from opposite sides of the draft pole, A, at different points and braced by the diagonal bar, C, when said parts are used as a riding attachment for a tillage plow, substantially as and for the purpose specified.

68,719.—STEAM ENGINE LUBRICATOR.—C. W. Doten, East Boston, Mass.

I claim the valve stem, B, with its valves, C and d, the tubular spindle, C, with its apertures, o and h, connected with the valve stem as shown the whole constructed arranged and operating substantially as set forth in combination with the shell, A.

68,720.—CEMENT COMPOUND.—John Fairchild, Eagleville, O.

I claim the composition herein described, compounded in the manner and for the purpose set forth.

68,721.—STEAM ENGINE.—John Fairclough, St. Joseph, Mo.

I claim the valve, B, constructed as described and operated by means of the cylinder heads through the rods, D, as herein set forth for the purpose specified.

2d, The steam chest, C, and the steam and exhaust ports, a a and h, within the piston, substantially as described.

3d, The piston, A, having the slide valve steam chest and steam ports arranged within it substantially as described in combination with a steam cylinder, substantially as and for the purposes set forth.

68,722.—FRUIT SAFE.—H. T. Field, Worcester, Mass.

I claim the fruit safe composed of the peculiarly constructed trays in connection with the cases as shown, the whole constructed and operating in the manner and for the purposes as above set forth and described.

68,723.—SIDE BOARD AND REFRIGERATOR.—J. B. M. Fifield, Philadelphia, Pa.

I claim a side board having a refrigerator or water cooler or bath combined with it substantially as and for the purpose specified.

I also claim the combination of a side board, refrigerator and table as herein shown and described.

68,724.—VALVE GEAR FOR STEAM ENGINE.—J. R. Fish, Fort Wayne, Ind.

I claim the guide, A, placed in an upright position and perpendicular to the line of motion from the driving shaft upon which guide the link is raised and lowered substantially as shown and described.

2d, I claim the combination and arrangement of the guide, A, horizontal guide, C, and blocks, B D, substantially as described for the purpose specified.

68,725.—MACHINE FOR LINING PERCUSSION CAPS.—Andrew J. French, Waterbury, Ct., assignor to Waterbury Brass Company.

1st, I claim the reversible worm, G, with its sleeve, e, working upon the grooved shaft, D, and provided with an oscillating dog, g, substantially as set forth.

2d, The device for feeding the frame, F, consisting of the sleeve, e, worm, G, ratchet bar, f, shaft, D, all made and operating substantially as herein shown and described.

3d, The sliding toothed bar, f, in combination with the reversible worm, G, and stops, o o', for the purpose of retaining the punch in position, so as to line the first cap in a new row, all as set forth.

4th, The device for feeding the plate, B, consisting of the recessed disk, L, on shaft, M, and of the pawl, r, on swinging-frame, I, all made and operating substantially as herein shown and described.

68,726.—GATE.—Daniel Fuller, Oakwood, Mich.

I claim the levers, D and F, and H I, with their cords, E G and J K, when arranged with the gate posts and their pulleys, and the gate with its slats pivoted to the rear post, the whole operating as and for the purpose specified.

68,727.—FOUNTAIN PEN HOLDER.—P. Gabriel, Seymour Ct.

1st, I claim the float, M, constructed as described, sliding nearly the entire length of the case, A, and arranged in relation with the plug, B, as herein set forth for the purpose specified.

2d, The construction of the stopper, C D E, substantially, as herein described, and so as to be used for the purpose, and so be susceptible of the adjustments herein specified.

68,728.—WEIGHING SCALE.—C. E. Gage, Fond du Lac, Wis.

1st, I claim arranging a bag-holder, D, in connection with the suspension rods of the scale, as and for the purpose specified.

2d, Balancing the scale with an adjustable weight, d, in a verticle mortise in the rear of the beam as described.

68,729.—EVENER FOR WHIFFLETREES—Merrit Gally, Marion, N.Y., assignor to Orris Potter and Frederick Grandin, of Walworth, N.Y.

I claim the curved projections of the body of the evener (E' E'), the pivoted clevises for the attachment of straps or chains, in combination with the lever projections (C C), and constructed as herein set forth.

68,730.—FRAME FOR MIRRORS.—O. L. Gardner, N. Y. city.

1st, I claim a frame for mirrors, etc., in which the side-pieces are arranged to be adjusted with regard to each other, substantially as, and for the purposes described.

2d, I also claim the groove or rabbet, a, having beveled side pieces arranged for adjustment of a frame for mirrors, etc., substantially as and for the purpose described.

68,731.—COAL STOVE.—F. Gilman, Minneapolis, Minn.

1st, I claim constructing the side and end plates of a stove, in two parts each, in such a manner that when the parts are put together, air tubes or apertures shall be found between them substantially as herein described.

2d. The construction and arrangement of the perforated top and bottom plates, and channeled or corrugated side plates as herein set forth for the purpose specified.

3d, I also claim the sunken ash-pit and the grate, in combination with a heating stove, constructed and arranged substantially as shown and described.

68,732.—CLOTHES WRINGER.—F. A. Gleason, Brooklyn, N.Y.

I claim the particular construction and operation of the cranks (a a), and their couplings (b b), as connected with the perpendicular bar (c), and in combination therewith the lever, C, and its cam, D; all substantially as herein specified.

68,733.—STEAM ENGINE VALVE.—G. L. Grant, Rockville, Ct.

I claim the arrangement of the lugs, a and b, when the same are made and operating substantially as and for the purpose herein shown and described.

68,734.—ICE CREAM FREEZER.—J. Gray, Milwaukee, Wis.

1st, I claim the combination with the rotating cylinder, B, and outer box or case, containing frigorific mixture, of a roller, E, arranged for operation within the cylinder substantially as and for the purpose herein set forth.

2d, Suspending the roller, F, in a free or adjustable manner by a socketed support of the same for adjustment of the latter relatively to the interior of the rotating cylinder, B, essentially as specified.

3d, The combination of the roller, F, and its frame, with the bar, H, supported by a spring, the tension of which may be regulated by a screw for operation in connection with a rotating freezing cylinder, substantially as herein set forth.

4th, The gatherer, L, constructed and applied for action within the cylinder, B, by means of outside guides on or down which said gatherer is allowed to freely slide, essentially as and for the purpose specified.

68,735.—CLOTHES DRYER.—James Greenhalgh, Jun., Glendale, R.I.

I claim making the horizontal bars, B, of the drying frames in two pieces, hinged at the centre, and hinged at their ends to the central post, A, and vertical bars, C, of the said frames, substantially as herein shown and described, and for the purpose set forth.

68,736.—BREECH LOADING FIRE-ARMS.—Edwin F. Gunn, Charleston, S.C.

I claim the lever, F, and sliding retractor, d, arranged in combination with the laterally swinging chambered breech block, D, all constructed and operating substantially as herein described for the purpose set forth.

68,737.—COCK EYES.—John Haggerty, East Springfield, Pa.

1st, I claim the spring bolt, B, set in the bed, A, and in combination with it in manner, and for the purposes as above set forth and described

2d, The bed, A, bolt, B, spring, b, and plate, C, or its equivalent, forming together a spring cock-eye, all substantially and for the purposes above set forth and described.

68,738.—DAMPER FOR STOVE-PIPES.—W. Hailes and P. Finkle (assignors to Peter Finkle), Albany, N. Y.

We claim the construction and application of a damper in the form of a wind-wheel, with oblique wings fitted to revolve within the pipe flue or chimney of a stove or furnace, substantially as described and for the purposes set forth.

68,739.—MUSKETO GUARD.—Horace Harris, Newark, N. J.

I claim frame, A, made of wire or other equivalent material secured to the top of the head by the strings, B, B, or otherwise, and the projection, C, in front in combination with the netting, D, substantially in the manner and for the purpose specified.

68,740.—POWER HAMMER.—Thomas B. Harrison, Maquoketa, Iowa.

1st, I claim the cut-off valve, D, consisting of the plug, H, shell, U, and casing, J, in combination with the air cylinder, Y, arranged and operating as described.

2d, The combination of the spring-box, S, spiral springs, piston, T, and rubber springs, C C, arranged and operating as described.

3d, The combination of the fixed air cylinder, Y, with the piston rod, A, spring-box, S, forked connecting rod and crank, P, constructed and operated substantially as described.

68,741.—FEED REGULATOR FOR SPINNING MACHINES.—Christopher Herrschaft, Brooklyn, N.Y.

1st, I claim the combination, with a clutch or other mechanism, controlled by the drawing rolls, and serving to throw in or out of gear with the driving shaft, C, wheels or pinions, F F,' of the secondary or gill bar operating shaft, H, having gear, G G,' the one of which is connected with its shaft by pawl and ratchet, L K, for operation in connection with the gear of the driving shaft, C, to give a fast or slow motion to the gill bars, substantially as specified.

2d, The combination of the fast wheel, G, and loose wheel, G', with its pawl and ratchet, L K, loose wheel and pinion, F F', with their clutches E E', D D', and clutch arms, or levers, I I', so arranged and operated by mechanism connected with the drawing rolls, as that the one lever may be acted upon in advance of the other, or both, simultaneously, essentially as herein set forth.

68,742.—WASHER FOR BOLT.—Gibbons G. Hickman, Coatesville, Pa. Antedated Sept. 10, 1867.

I claim the washer, B, provided with a spring recessed in its face, and operating substantially as described.

I claim a metal washer, made in two separate pieces, the lower one provided with a spring as described, and the upper one turning with the nut and retained by the spring as described and represented.

68,743.—SHEEP SHEARS.—G. Hilgar, Brownington, Pa.

I claim the manner herein shown and described of attaching the central cutter, I, to and connecting it with the ordinary cutters, D and E, by means of the pin, d, lever, G, and stud, F, or its equivalent, all made as set forth.

68,744.—J. P. Hoagland, and George E. Moser, Centralia, Pa.

We claim, 1st, The sheller formed by the combination and arrangement of the stationary sheller plate, I, sheller wheel, H, and hopper or shute, J, with each other, substantially as herein shown and described, and for the purpose set forth.

2d, The combination of the sheller wheel, H, shaft, F, fly wheel, G, cog wheel, E, cog wheel, D, shaft, B, drive or crank wheel, A, band, P, pulley, R, and fan shaft, S, with each other, for the purpose of operating the sheller and fan by the same power, substantially as herein shown and described.

68,745.—VALVE FOR STEAM ENGINE.—George W. and Elisha Hopkins, Brooklyn, N. Y.

We claim, 1st, The combination with a shifter, F, operated as described, of a valve, H, in gear with the shifter for controlling the throw of the main valve or valves, as herein set forth.

2d, The shifter, F, driven as specified, valve, H, operated thereby, piston, J, or its equivalent and independent main valves, K K', with their several ports or passages, all for operation together, essentially as described.

68,746.—LIQUID AND FLUID METER, AND METHOD OF OPERATING VALVES.—J. C. Horton, New York city, and S. K. Hawkins, Lansingburgh, N. Y.

We claim, 1st, In combination with a measuring cylinder and reciprocating piston, the hollow oscillating valves so constructed as to operate alternately as induction and eduction valves, substantially as described.

2d, We claim the reciprocating grooved plate, F, in combination with the oscillating valve, arms, J, bar, K, stud, K', and the levers and spring by which said stud is thrown from one groove to the other, substantially as described.

3d, We claim the reciprocating grooved plate, F, in combination with the stud, K', and the levers and spring by which said stud is thrown from one groove to the other, substantially as described, as a means of operating oscillating valves.

4th, We claim the hollow oscillating valve, V, with its single port, V', so constructed as to operate alternately as an induction or eduction valve, to regulate the flow of any kind of liquids or fluids, substantially as described.

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68,747.—STEAM ENGINE.—S. W. Hudson, Packer Tw'p, Pa.

I claim, 1st, The cylinder provided with tapering steam openings, for the purpose and substantially as described.

2d, The cylinder provided with the depression in the side opposite to the triangular steam opening, substantially as and for the purpose described.

3d, The piston, provided with the rings, F, having flanges imbedded in grooves of the piston head, and with their peripheries extending to the ends of the piston, as and for the purpose described.

68,748.—STEAM ENGINE.—S.W. Hudson, Beaver Meadow, Pa.

I claim, 1st, The narrow steam openings, E E, arranged lengthwise, on the interior surface of the cylinder, so as to be gradually uncovered by the motion of the steam piston, as herein described.

2d, A vertically oblique wall, or side, e, to the steam port, to adapt the steam passage, to enlarge in an increasing ratio as said passage is opened by the piston for the admission of steam to the cylinder, substantially as described.

68,749.—CORN STALK CUTTER.—Almon Hunt, Macomb, Ill.

I claim, 1st, The frame, A, provided with the plate, H, arranged substantially as described, for the purpose of cutting, breaking, or bending down the stalks as set forth.

2d, I claim the combination of the stationary curved hooks, or blades, E, with the movable blades, a, the latter being operated by the motion of the machine, said parts being constructed and arranged for joint operation, substantially as described.

68,750.—LIFTING JACK.—Albert Jackson, Clifton Springs, Ill.

I claim a lifting jack, composed of the uprights, A A, base piece, B, slide, E, and the lever, C, provided with the eccentric, D, all being combined and arranged to operate in the manner substantially as and for the purpose set forth.

68,751.—WINDOW SHADE.—T. B. James, Muscatine City, Ia.

I claim constructing window shades with quadrilateral prismatic sticks, A, arranged and woven together, substantially as set forth.

68,752.—GATE FASTENING.—W. Kimble, Salem, Ohio.

I claim the arrangement of the long latch, b, in combination with the handles, e e, and the spring, h, for fastening a gate by catching in the hook, g, placed on the heel post, B, substantially as herein described.

68,753.—WATER ELEVATOR.—A. H. Knapp, Newton, Center, Mass.

1st, I claim the two sprocket wheel, or wheels, or pairs of sprocket wheels, C D, situated on different shafts at equal hights, and at sufficient distance apart to allow the water to be discharged between them into the reservoir or spout beneath, when arranged in relation to the buckets or cups in clusters, substantially as and for the purpose herein specified.

2d, I also claim the arrangement of the buckets or cups, in two clusters or groups, on opposite parts of the chain, the remaining portions of the chain being without buckets, or cups, substantially as and for the purpose herein set forth.

3d, I also claim the arrangement of side gearing, p r s t, at the main shaft, E, in combination with the coupling, n, and shifting device, l m, or the equivalents thereof, for the purpose herein set forth.

4th, I also claim the chain guides, j k o, separately, or together as arranged, in relation to the chain and buckets, or cups, substantially as and for the purposes herein specified.

5th, I also claim the chain, A, the wheels, C D, and the cross bars of the links extending across, and resting in notches, v v, of the wheels, all arranged as set forth.

6th, I also claim the buckets or cups held by the bent links, c c, and so arranged that their centers are nearly opposite to the points between the links, substantially as and for the purpose herein specified.

7th, I also claim the buckets or cups, with notches or indentations in the bottoms, in combination with the bent links, for the purpose set forth.

8th, I also claim the guide wires, or rods, g g, which pass around and wire one-half of the edges of the several buckets or cups, and clasp the middles of the supporting links, the links being bent at the joints therewith, substantially as and for the purpose herein set forth.

9th, I also claim the open spaces, w w, in the edges of the wheels, intermediate between the chain-bearing notches, v v, for the purpose herein set forth.

10th, I also claim the suspended buckets or cups, with flattened inner edges, as arranged upon the wheel or wheels, substantially as and for the purpose herein set forth.

68,754.—MECHANICAL MOVEMENT, OR SUBSTITUTE FOR COG WHEEL.—George H. Knight, Cincinnati, Ohio.

1st, I claim the mode of producing corresponding opposite rotations of two shafts, pistons, or rollers, by equal connection, to a stud or link restricted to a rectilinear path, substantially as set forth.

Second, Securing corresponding opposite rotation of two shafts or other objects by eccentric wrists, B B', connected by pitmen, L L', i i', to studs, H h, guided to vertical paths by links, G g, and arms, C C' c c', substantially as set forth.

68,755.—PLOW POINT.—Hinrick Kniphals, Davenport, Iowa.

1st, I claim the application of a hollow iron or steel point, C, to a plow from which the point is worn away by use, to restore the proper form, and

2d, The hollow point, C, applied to a plow which is broken or breaking apart at the point not only to restore its true form, but also to bind the parts together firmly, at the same time covering the break, and presenting a smooth surface to the earth, which slides over it.

68,756.—TRACE BUCKLE.—E. F. Lacy (assignor to himself and S. D. Thompson), Danville, Ill.

I claim the clasp, in combination with the wedge having a tongue, substantially as and for the purpose described.

I also claim the spring or its equivalent in combination with the above, substantially as and for the purpose specified.

68,757.—THILL COUPLING.—Cook C. Lawrence, Homer, Mich.

I claim the plates, g g', provided with disk segments, e e', in combination with the slotted clip plate, b, constructed and operating substantially as herein described.

68,758.—ARTIFICIAL LEG.—Leonhard Legran, Alleghany City, Pa.

I claim the arrangement of the toe-springs, l m and n, hinge, 14, elastic bands 5 and 6, cords, w and y, cross pieces, 8 and 9, and check cord, 11, when used in connection with the leg, A, and foot, C, the whole being constructed, arranged and operating substantially as herein described and for the purpose specified.

68,759.—BEE HIVE.—Volney Leonard, Springfield, Pa.

I claim a trap for catching queen bees during the time of swarming, composed of a shallow box provided with the slides and a glass in the top, all arranged substantially as herein set forth.

68,760.—CORN DROPPER.—Charles E. Lipe, Fort Plain, N. Y.

I claim the strap, H, and roller, I, in combination with the handle, F, and seed slide, B, all being arranged and applied to a box or seed receptacle, A, provided with a cut-off brush, D, or its equivalent, to operate in the manner substantially as and for the purpose set forth.

68,761.—GRAIN MEASURE.—N. M. Lurton, Newbern, Ill.

1st, I claim the receiving box or hopper, A, and the measuring box, B, arranged substantially as described in combination with the revolving wheel, C, the pointer, f, and the screen, E, when used for the purposes specified.

2d, I claim the indicating wheel, C, and pointer, f, as and for the purposes described in combination with the boxes, A and B.

68,762.—MACHINE FOR ROLLING WHIPS.—Justus P. Luther, Berlin, Wis.

1st, I claim the application of a pitman driver by steam or other power to a block for rolling whip lashes moving at right angles with the lash, substantially as specified.

2d, The application of inclined planes at each end of the block for rolling whip lashes to the elevating rollers, n n, or any equivalent device so as to lift the block and allow the lashes to slide substantially as specified.

3d, The combination of the pitman, v, and rolling block, m, rollers, n n, driving post, p, main lever, u, hand bar, i, hands, x x, ratchet wheels, s s, and small pulleys, e e, so as to roll the lashes and slide them under the rolling block.

68,763.—FOG ALARM.—J. C. Lyons, New York City.

I claim in combination with an air pump and whistle, as set forth, a flexible and elastic air chamber or reservoir for the purposes set forth.

The reservoir constructed with the head blocks, F G, rods, H H, and covering, C, in combination with the whistle, A, and pump, B, substantially as set forth.

Covering the flexible tube connection with short sections of metallic tubing as and for the purpose set forth.

68,764.—HOES.—Charles Maham, Grand Island, Cal.

I claim a hoe constructed as herein described as a new article of manufacture.

68,765.—EAVES TROUGH BRACKET.—John Marshall, Hartland, Mich.

I claim the brackets, D and E, combination with the strap, H, and the strap, K, folding over the trough and in securing it to the roof substantially as and for the purpose described.

68,766.—CONVERTIBLE WAGON SEAT.—Chelton Matheny, Greensburg, Ind.

I claim the wagon seat convertible into a manger or into a tail-board, substantially as set forth.

68,767.—FLOOD GATE.—C. B. McKinney, Houston, Ohio.

I claim a flood gate having the float, d, composed of the flat platform, d', and the inclined side piece, d'', firmly fixed to each other, and the float thus constructed being firmly bolted to the bottom of the gate, substantially as and for the purpose specified.

68,768.—SHAFT COUPLING.—W. S. McKinney, Cincinnati, O.

I claim the combination of the screw threaded and lipped sleeve, D, with the screw threaded clutch, B, and plain clutch, C, as and for the purpose herein described and represented.

68,769.—WASHING MACHINE.—J. F. Melcher, Bloomington, Ill.

1st, I claim the double spurred wheel, D, constructed with arched spokes for receiving the pinion, G, and also with radical arms or handles, D', substantially as described.

2d, The combination of the batten, C, provided with holes, a a1 a2, with the cover, B, and with double spurred master wheel, D, pinion, G, and a vertical rotary rubbing device, substantially as described.

3d, The construction of the rotary rubbing device of bars, d d, blades, g g, and a U shaped device, J, substantially as described.

68,770.—COMPOSITION FOR ELASTIC HAND STAMP.—George H. Mellen, Alexandria, Va.

1st, I claim the combination of the above named ingredients to form, when boiled, a new and useful composition of matter for the purpose above specified, substantially as described.

2d, The method of casting said composition when boiled, substantially as described.

68,771.—WARDROBE TRUNK.—Charles Memmert, Georgetown, D. C.

1st, I claim the pieces, D and E, in combination with a trunk, applied and operating substantially as described.

2d, The wardrobe trunk consisting of the body, A, lid, B, rim, C, pieces, D E, tray, f, and cover, g, all applied and operating substantially as described.

3d, In combination with the above the metal rim, C, forming the bearing for the pieces, D E, and doors, f g, substantially as described.

68,772.—EXTENSION BED FOR FARM WAGON.—Samuel W. Meredith and David Mulligan, Greensburg, Ind.

I claim in combination with a wagon bed, A, a folding tail piece, C, permanently attached thereto by hinges, C, and the side boards, D, hinged to the tail piece, C, substantially as and for the purpose set forth.

2d, The combination and arrangement of the bed, A, hinged tail-piece, C, with sides, D, hinged thereto, segment, E, and staples, F, substantially as and for the purposes set forth.

3d, The combination and arrangement of the tail-piece with hinged sides, the wagon bed and the spring catches, I, substantially as and for the purpose set forth.

68,773.—MACHINE FOR DRIVING SPOKES IN WAGON WHEELS.—G. W. Miles, (assignor to Hosler, Miles & Co.,) Michigan City, Ind.

I claim the combination of the rotating shaft, P, having the hammer attached thereto, with the vibrating frame, N. eccentric, Q, and post, T, or its equivalent, when arranged to operate substantially as described.

68,774.—ATTACHMENT FOR BREAST COLLAR.—R. E. Miles, Louisville, Ky.

I claim a plate provided with the loops and applied to a breast collar substantially in the manner and for the purpose set forth.

68,775.—HARVESTER.—C. G. Miller, Springfield, Ohio.

I claim the combination of the plate, M, block, S, and, arm, Q, substantially as and for the purpose set forth.

Mounting the cutters crank shaft and driving pinion upon the coupling plate, M, as and for the purpose set forth.

The carriage, p, in combination with the rod, K, bar, I, and endless chains, L, all constructed as set forth.

The combination of the rake arm, o, shifter, q, weighted lever, r, and latch, a, to change the connection from one part of the chain, I, to the opposite and thereby reverse the motion of the rake substantially as set forth.

The combination of the rake arm, o, with the curved arm, r, the notched bar, I, rod, K, carriage, p, and the spring bar, w, all constructed as and for the purpose set forth.

The open head reel, N, constructed with jointed arms and adjustable jointed blades in the manner set forth so as to permit the attachment to expand the same for the purpose of making it sweep nearer to or further from the platform and cutters as set forth.

The movable head, h, connected to the reel arms by short arms, i, and moved back and forth by the pinion, k, and rack, l, as and for the purpose set forth.

The bolt, e', with the nut, g', in combination with the hinged tongue, C, and pin, h', substantially as and for the purpose set forth.

Making the nut g', with an angular portion and a cylindrical portion so that the wrench, k', may be shifted theron without removing it entirely from the nut.

68,776.—DEVICE FOR SETTING ANIMAL TRAPS.—Israel Miller, Bryan, Ohio.

1st, I claim the shaft, A, furnished with the flange, a, or its equivalent in combination with the baiting rod, B, substantially as described.

2d, The cap, D, in combination with a flanged shaft, A, or its equivalent, substantially as shown and described.

68,777.—CARRIAGE PLOW.—Horatio Minuse, Milan, Ohio.

I claim the special arrangement and combination of the herein described plow and carriage, when operated in the manner and for the purpose substantially as set forth.

68,778.—SHAFT COUPLING.—Foster Nevergold, & David Brosey, Pittsburg, Pa.

1st, We claim the combination of boxes, C C', when both are constructed and arranged as and for the purpose set forth.

2d, The combination of sliding block, d, with lever, h k, substantially in the manner set forth.

3d, the lever, k, in combination with coupling block, C', as and for the purpose described.

4th, Coupling box, C C', sliding block, d, levers, h k and f, all combined as and for the purpose specified.

68,779.—TOTAL INSULATION OF TELEGRAPH LINES AND APPARATUS.—G. W. Nichols, Chicago, Ill.

1st, I claim surrounding or covering the various parts of telegraph apparatus as specified and set forth with an insulating substance as and for the purpose specified.

2d, The insulation of the interior of the battery cup, A, substantially as described and set forth.

3d, The covering of the outer surface of the battery, when not made of an insulating material.

4th, The total insulation of the entire telegraph circuit for the purposes specified and set forth.

5th, The insulation of the relay magnet substantially in the manner specified.

68,780.—CARRIAGE JOINT.—Richard Nickson, Akron, Ohio.

1st, I claim the combination of the spring friction block, C, with the joint, substantially as and for the purpose specified.

2d, The hinged piece, a, and spring catch, b, in combination with the spring friction block, C, and the fixed friction piece, B, and the bar, A, substantially as and for the purpose specified.

68,781.—SNAP HOOK.—H. S. North, (assignor to himself and W. and B. Douglas, Middletown, Conn.

1st, I claim a snap hook having the rear end of the movable jaw extended beyond the axis or joint in combination with a bolt substantially as and for the purpose described.

2d, In snap hooks a movable jaw so constructed as to form a bearing for a spring arranged within the fixed jaw substantially as described and for the purpose specified.

3d, A snap hook provided with a bolt for locking its movable arm or jaw when such hook is so constructed and a spring is so arranged as to both throw said bolt and to close the movable jaw.

4th, A bolt so arranged in combination with so constructing a snap hook that it can be either secured in a position out of action or fastened when locked in the movable jaw or both, substantially as described.

68,782.—SLIDE FOR EXTENSION TABLE.—H. Olds, Syracuse, N. Y.

1st, I claim the combination of the stay pins, C, the cross shaped slides, A, and slide bars, B, substantially as and for the purpose specified.

2d, The combination of the stop bolt, D, coiled spring, E, and inclined groove or grooves, F, with the sliding bars, B, substantially as herein shown and described and for the purpose set forth.

3d, The combination of the key, G, with the stop bolt, D, coiled spring, E, and groove, F, substantially as herein shown and described, and for the purpose set forth.

68,783.—VALVE FOR STEAM ENGINE.—C. R. and N. P. Otis, Yonkers, N. Y.

We claim the valves and passages essentially as herein shown and described consisting of the main piston valves, F F', with their passages, f f' e h i, and induction and eduction passages, a and b, within the valve chest, D, in combination with an outside reversing valve, H, arranged for operation together, substantially as specified.

68,784.—CULTIVATOR.—Ira A. Palmer, Monmouth, Ill.

1st, I claim the construction of the frame, A D C B, substantially as described and for the purpose set forth.

2d, The adjustable hook, z, as arranged and for the purpose described.

3d, The jaws, P P, knuckle, r'' p,' adjustable pin, a'' l,'' and plates, T, constructed and arranged as described and for the purpose set forth.

68,785.—"CIGAR GAGE" AND "BUT CUTTER."—Henry Peterson, Chicago, Ill.

1st, I claim the double knife, H, arranged and constructed as described in combination with the lever, G, standards, E and K, and spring, L, the whole arranged and operating substantially as and in the manner herein set forth.

2d, The combination of the double knife, H, with the slotted trough, C, and the slide, D, the whole arranged substantially as and in the manner herein described and for the purpose specified.

68,786.—BREECH-LOADING FIRE-ARM.—Martial Pidault and G. Elieze dit Lagieze (assignors to themselves and J. F. Gevelot), Paris, France. Patented in France Sept. 26, 1866.

1st, We claim the combination and arrangement of the stationary socket, D, sliding chamber, A, with pin, a, and the hinged lever, E, substantially as described for the purpose specified.

2d, The stationary tube or socket, D, arranged within the sliding chamber A, to serve as a breech piece, substantially as herein shown and described.

3d, The combination of the hammer, G, with the catch, H, on the trigger and with the springs, R and R', all made and operating substantially as herein shown and described.

4th, The combination and arrangement of the slotted sliding rod, K, pin l, socket, D, and sliding chamber, A, substantially as described for the purpose specified.

68,787.—WRENCH.—C. T. Poulton, Danboro, Pa.

I claim the combination of the wrench, E, revolving sleeve, D, spindle, A, all constructed and arranged substantially as and for the purposes set forth.

68,788.—APPARATUS FOR AERATING LIQUIDS.—E. L. Pratt, Boston, Mass.

I claim, in combination with the concave plunger and the convex bottom, the apertures through the vessel, arranged and operating as air passages substantially as described.

68,789.—FLYING APPARATUS.—W. F. Quimby, Wilmington, Del.

I claim, 1st, The lateral or side and dorsal wings applied to the person in such a manner as to admit of said wings being operated by the combined action of the arms and legs, substantially as shown and described.

2d, The means of connecting the lateral or side wings to the person consisting of the frames and joints, constructed and arranged substantially as shown and described.

68,790.—FENCE.—Thomas D. Read, Aberdeen, Ind.

I claim the pins, D D, which connect the panels, A A, at the top, as described, used in combination with the bed pieces, B, with their wedges, C, in the manner set forth.

68,791.—MORTISING MACHINE.—John Richards and Wm. H. Doane (assignors to J. A. Fay & Co.), Cincinnati, Ohio.

1st, I claim the pawl, w, for adjusting the treadle, arranged and operating substantially as described.

2d, The yoke, d, and devices, g m r and i, for reversing the chisel, as herein set forth and described.

3d, The roller, K, for feeding the stuff to the chisel, operating in the manner and for the purpose described.

68,792.—WINCH.—R. D. Rogers, Cape Elizabeth, Me.

I claim, 1st, The combination and arrangement of the shaft, f, pawl, p, ratchet, g, ratchet, h, lever, k, truck, j, pawl, m, and gear, i, with the gear, c, shaft, b, and barrel, a, all as and designed to operate in the manner and for the purposes hereinbefore set forth.

2d, In combination with the shaft, f, the latch, n, and its groove on the said shaft, as and for the purposes set forth.

3d, In combination with the shaft, b, and groove, e, the latch, d, as and for the purposes set forth.

4th, The combination of the arms, r s, head, t, and adjustable bolt, w, as and for the purposes specified.

68,793.—MILK STRAINER.—W. F. Rossman, Hudson, N. Y.

I claim a strainer of cloth, wire gauze or any other material attached to an adjustble band, A, with breast piece, B, and spout, C, and all constructed and combined substantially in the manner and for the purpose herein set forth.

68,794.—HOISTING APPARATUS.—William Rung, N. Y. City.

1st, I claim so arranging the hoisting chain and the device for operating it that two loops are suspended from the latter in one of which the hook pulley is arranged, the arms of this loop being laid overpulleys on two shafts, D and F, which are both revolved with exactly equal velocity and in the same direction, as set forth.

2d, The worm, i, and worm wheel, j, in combiuation with the shafts, D E and F, and gear wheels, k l and m, all made and operating substantially as herein shown and described.

3d, Providing the case, A, with folding lids, c and d, substantially as and for the purpose herein shown and described.

4th, The guards, r and s, in combination with the grooved pulleys, h and n o, respectively for the purpose herein shown and described.

5th, The projecting lugs, L L, when arranged on the case, A, of a hoisting apparatus, substantially as and for the purpose herein shown and described.

68,795.—HARNESS MOTION FOR LOOMS.—Charles Schilling, Auburn, N. Y.

I claim the combination and arrangement of the sliding plate, g, adjusting screws, f, cranks, a a', adjustable pitman rods, b b', piston rods, c c', and standard, C, substantially as described for the purpose specified.

68,796.—TRACE BUCKLE.—C. Schwaner, Keokuk, Iowa.

I claim the manner substantially as herein described and shown of constructing and arranging the two covered hinged frames constituting the buckle, in combination with clamp, g, and holding tongue, e.

68,797.—POWER HAMMER.—Thomas Scott, Madison Mills, and John Clarridge, Pancoastburg, Ohio.

1st, We claim the combination, substantially as shown and described, of the clevis, f, disk, c, spring, g, and sleeve, d, whereby the hammer may be reversed, substantially in the manner set forth.

2d, The arrangement of the several devices for producing the downward and upward stroke and the lateral movement, substantially as herein shown and described.

68,798.—CHURN.—Lewis W. Shaeffer, West Milton, Ohio.

I claim the arrangement of the several wings, B and C, on the arms, r and s, with reference to the vessel, A, in the manner substantially as and for the purpose specified.

68,799.—MILL GEARING.—Joseph Shickel, Harrisonburg, Va.

I claim the combination of the stationary master wheel, E, the pinions, D D D D and F, the spur wheels, B B C C, the arms, H H, and the whole substantially as above described, for the purpose of increasing the speed of the trundle head in mills, and the velocity of burrs.

68,800.—HORSESHOE.—Wm. H. Shurtleff, Providence, R. I.

I claim the the combination with a socket in the shoe body, of a removable calk, the parts being joined respectively so that the said calk shall lap over and protect the said socket, substantially in the manner herein shown and specified.

68,801.—GATE.—Sylvester Smith, Rockford, Ill., and A. Persels, Beloit, Wis.

We claim the gate, D, lever, E with bearing, e, spring, s, strip, o, yoke, h, pulley, i, chain, k, ropes, l, pulleys, b', and handles, m, when constructed and arranged as described.

68,802.—DRESSING CASE AND BATH TUB.—Caroline A. Staples, Boston, Mass.

I claim a dressing case and bath tub combined, constructed substantially as set forth.

68,803.—CULTIVATOR.—Mordecai Sweet, Richland, Ind.

I claim the arrangement of the shanks, K, with the shaft, F, with its arms, handle, and connecting rods, and with the levers, M M, substantially as and for the purpose set forth.

68,804.—GATE.—John M. Swift, Shelbyville, Ill.

I claim, 1st, A combination of road boards, 1, 1', cross tie, 7, bed pieces, 3, 3, wheel guides, 5, 5', 6, 6', ground boards, 2, 2', which I have called passover combination.

2d, The combination with the slide, 11, 11, the posts, 8, 9, and 10, the upper and lower channel guide boars, the channel in which the slide moves, and the upper surface of the cross tie, 7, which I have called the slide and channel combination.

3d, A combination of the two short and two long bulk posts with the two sliding bars, 21, 21, and the blocks, E fE t, which form the orifice for end of slide, which I have called the bulk combination.

4th, I claim the combination of the cord, 15, the tie knots, 16, the cord bed, C C, the cord pins, d d', the cord block, 13, the two eyelets, 14, 14, the ground posts, 17, 17', the tie blocks with the slips, 20, 20'.

5th, I claim and desire letters patent for the gate combined and constructed as set forth in the specification, description, and drawing.

68,805.—CHURN.—John G. Taylor, East Bethlehem, Pa.

I claim in a churn the combination of the adjustable frame, K, and movable bar, A, with the detachable dasher, E G, having the screw and nut, L, at the foot of the shaft, the whole being constructed and arranged as herein described.

68,806.—BRAKE FOR HORSE POWERS.—A. D. Tingley, Adrian, Mich.

I claim, 1st, Operating the brakes by a shaft passing down through the center of the drive wheel, substantially as herein shown and described.

2d, The combination of one or more shoes, C, arms or levers, D, ropes or chains, E, and shaft, F, with each other and with the drive wheel, B, substantially as herein shown and described and for the purpose set forth.

68,807.—VENTILATING DEVICE FOR CEILINGS AND WALLS.—O. S. Trexler, Naperville, Ill.

I claim, 1st, The cone, B, in combination with the tube, A, arranged substantially as shown and described, for the purpose set forth.

2d, The adjustable door, C, in combination with the tube, A, and cone, B substantially as and for the purpose specified.

68,808.—WAGON HUB.—W.C. Tucker, Richmond Switch, R.I.

1st, I claim the cup flanges, c e, on the back and front ends of the wagon hub, B, upon which are fitted the corresponding flanges, a, on the axle, A, and n, on the nut, d, as herein shown and described.

2d, In combination with the above I claim the stationary collar, m, and the adjustable collar, m', on the hub, B, combined and arranged as and for the purpose specified.

68,809.—PAPERING PINS.—G. L. Turney, London, Eng., assignor to S. A. Harshaw, New York city.

I claim as a new article of manufacture a pin book constructed as described, consisting of the separate leaves, B, secured together at one edge, C, their outer edges bent over to receive the pins, all inclosed in the cover, D, as herein set forth, for the purpose specified.

68,810.—PUMP.—Hiram Tyler, Gaines, N. Y.

I claim, 1st, The construction and arrangement of the receptacle, Q2, having separate openings, R S, supported upon the chamber, D, by the tube, P, the double bent valve plate, V, swinging upon the support, V2, and connected by the wire, X, passing through the tube, P, with the operating knob, W, as herein set forth, for the purpose specified.

2d, The plunger, E, constructed as described, consisting of the central elastic packing, G, clamped between the prong-shaped plate, H, and the perforated disk, F, as herein set forth, for the purpose specified.

68,811.—SKID AND FRICTION ROLLER.—Francis Vandoren, Adrian, Mich.

I claim, as an improved article of manufacture, a combined skid and friction roller, made and operating substantially as herein shown and described.

68,812.—PRESS.—C. Philip Wagner, New York city.

I claim, 1st, The combination of the screw, H, toothed segments, I I, toggle joints, J J1, and platens, K K, all being arranged for operation together essentially as herein set forth,

2d, The inner pressing board or plate, f, arranged adjustable with relation to the body of the platen, substantially as and for the purpose set forth.

68,813.—FLEXIBLE RAMMER FOR TURRET GUNS.—J. B. Walker, Elizabeth, Pa.

I claim, 1st, Constructing a rammer with a flexible rod or staff, D, when the same is formed and operates substantially as described.

2d, I claim the combination of the tube, B, curved grooved plates, C C, and rammer rod or staff, D, when the same are constructed and combined substantially as above set set forth and for the purpose specified.

3d, I claim the tube, B, curved grooved plates, C C, and rollers, e e, when the same are combined and arranged substantially as set forth for the purpose specified.

4th, I claim the method shown of operating the rammer rod or staff, whether the same be accomplished by means of hand and pulley wheels, roller and chain or screw, spur and pinion wheels and crank, substantially as described and for the purposes set forth.

5th, I claim hinging the rammer to the turret, substantially as described and for the purposes specified.

6th, I claim uniting the sections for the rammer rod at the point, d1, by a ball and socket joint, substantially as described and for the purposes set forth.

68,814.—WATCH.—N. B. Wallace, Fond du Lac, Wis.

I claim the two-part cup, F, for the winding post or other axis of a watch movement, substantially as and for the purpose described.

68,815.—MACHINE FOR CUTTING FILES.—Samuel Walton, Ballardvale, Mass.

1st, I claim the head block, A, constructed as shown and described, with one or more sockets, 9 9, and grooves, 37 and 3, arranged in the manner and for the purpose set forth.

2d, I claim the half-hemisphere ball or balls, H, or the equivalent thereof, in combination with the head block, A, substantially in the manner and for the purpose set forth.

3d, I claim the shield, G, constructed as shown and described, and applied to the carriage, and arranged to slide in the groove made in the half ball, H, as and for the purpose specified.

4th, I claim the adjustable gibbed inclines, S, in combination with and applied to the top of the front stand, M, in the manner and for the purpose substantially as described.

5th, In combination with the adjustable gibbed inclines, as above described I claim the hammer, k, and cutter, e, constructed and arranged to operate for the purpose and substantially as described.

6th, I claim the combination of the shaft, 35, and arms, 34, the short rod, 33, the adjusting devices, E4 and E2, with the lever, v, and the former, W, all arranged to operate substantially as and for the purpose specified.

7th, In combination with the parts last above claimed, I claim the cam, Y, or a series of like or similar cams acting against the springs, J, in the manner substantially as described for the purposes specified.

8th, In combination with the movable carriage, A, and applied to the lever, v, I claim the former, W, and the guide plate, x x, on the moving carriage, arranged substantially as described.

9th, In connection with the head block, A, I claim the tongs, E, and the eccentrict shaft, y1, constructed and arranged for operation, substantially as and for the purpose set forth.

10th, In combination with the tongs and eccentric shaft, I claim the parallel bars, f, and the elastic or spring substance, d, the nuts, g, and rods, 9, arranged for operation substantially as and for the purpose specified.

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11th, In combination with the parts last above claimed, I claim the double face plate, F, in the manner and for the purpose described.

12th, I claim the springs, C, bed, B, plate, F, and rods, 9, when combined and arranged as and for the purpose set forth.

13th, I claim the combination of all the operative parts specified, arranged to operate substantially as and for the purpose or purposes shown and described.

68,816.—LOCK AND ALARM ATTACHMENT FOR MONEY DRAWERS.—J. H. Weaver, Columbus, Ohio.

I claim, 1st, the lock, consisting of the spring, b, lever, d, string, f and K, and handle, i, all made and operating substantially as herein shown and described.

2d, The combination of the lock, when made as herein shown and described with the bell, C, or other alarm, substantially as set forth.

3d, The swinging lid, l, and catches, n and o, in combination with the aforesaid lock, and made and operating substantially as herein shown and described.

68,817.—WASHING MACHINE.—M. D. Webber, Woodbury, Vt.

I claim the combination of the lever, D, connecting bars, E, and pivoted beaters, F, with each other and with the box or tub, A, substantially as herein shown and described and for the purposes set forth.

68,818.—SPRING BED BOTTOM.—Dexter P. Webster, Upper Gilmanton, N. H., and Hermon W. Ladd, Philadelphia, Pa.

We claim, 1st, the hooks, C, separate and independent, provided with flaring mouths, in combination with the coils of the springs, substantially as and for the purpose described.

2d, The springs with an auxiliary fastening formed by turning up one end of the spring so as to pierce the slat, when otherwise secured by the single wire clamp, a, substantially as described.

3d, The mode of packing by interlocking the springs and slats as herein represented and described.

68,819.—MACHINES FOR MAKING LEAD PENCILS.—Edward Weissenborn, Hudson City, N. J., assignor to American Lead Pencil Company, New York City.

I claim, 1st, the sliding bars, D, carrying the pivoted catches, E, arranged in relation with the frame, a, guides, C, and cutters, substantially as herein set forth for the purpose specified.

2d, The sliding bars, D, pivoted cutters, E, and levers, F, combined with suitable cams, H, and spring retractors, l, operating substantially as herein set forth for the purpose specified.

3d, The arrangement of the two cutter heads, N and T, and their blank supporting beds, with reference to each other and to the feeding devices, so that one cutter shall first groove the whole length of one side of the blank, and then the other, the whole length of the other side to separate it into pencils as described.

4th, The cutters, C', constructed with a flat portion, a2, and curved or semi-circular portion, b2, and applied to the cutter head, substantially as herein set forth for the purpose specified.

68,820.—WHEELS AND AXLE CONNECTION.—John F. Welch, Hingham, Mass.

I claim the above described device for locking a carriage wheel to its axle, consisting of the plate, i, with its screw, j, the nut, b, and the jaw bars, a a a, combined together, and operating in connection with the ring, e, applied to the axle, substantially as shown and explained.

68,821.—EVAPORATING PAN.—N. Willey, South Windsor, Ct.

I claim an evaporating pan, whose transverse partitions, formed from its bottom, meets at an angle at their bottom, substantially as described.

I claim, in combination with a bottom so constructed, the inclined sides as and for the purpose described.

I claim the combination of such a bottom and inclined sides, with side troughs, substantially as set forth.

68,822.—OVER SOLE FOR BOOTS AND SHOES.—Edmund W. Woodruff (assignor to himself and B. H. Camp), Washington, D. C.

I claim making the rear end of an over sole of elastic rubber, to which is attached a spring clasp, operating substantially in the manner and for the purposes specified.

68,823.—STAND FOR SUPPORTING WAGON AND OTHER WHEELS WHEN BEING PAINTED.—John N. Woodward (assignor to himself and Walter Scott), Aurora, Ill.

I claim the adjustable plate, C, supporting the spindle, D, in combination with the standard, B, and a suitable detent, F F', for retaining the spindle in any required position, substantially in the manner and for the purpose set forth.

I claim the adjustable plate, C, supporting the spindle, D, in combination with the revolving standard, B, plate, A, and detent, F F', for retaining the spindle and wheel placed thereon in any required position, substantially in the manner and for the purpose set forth.

68,824.—HORSE SHOE NAIL MACHINE.—C. D. Wrightington, Fairhaven, B. P Rider, Chelsea, Mass.

1st, We claim the combination of the four hammers, D D', attached to or forming a part of the pistons of steam cylinders, with the gears, E, arranged substantially as described, whereby the forward motion of the two opposing hammers, D D, actuated by the direct action of the steam, will operate, to retract the opposing hammers, D' D', substantially as described.

2d, I claim the arrangement of the hammers, D D', on the inclined sides of the bed plate, A, as and for the purpose described.

68,825.—THRASHING MACHINE.—Benjamin Yeakel, Allentown, Pa.

I claim the detaining apparatus, consisting of the boards e and f, when the same are arranged and operating substantially as and for the purpose herein shown and described.

2d, The springs, c, on the frame, B, in combination with the bars, d, and shaking table, F, all made and operating substantially as herein shown and described.

68,826.—HANGER FOR SHAFTING.—James Yocom, Jr., Philadelphia, Pa.

I claim a hanger which is constructed of cast metal with wrought metal screw tapped nuts, for receiving the adjusting screws, the cast metal being made to surround the wrought nuts, substantially as described.

68,827.—DRILL.—E. S. Young, Worcester, Mass., and A. Whipple, Whitingsville, Mass., assignors to Edward S. Young, Worcester, Mass.

We claim the combination as well as the arrangement of the slider, G, the cylindrical tubular shaft, H, and the clamp screws, c d, with the cylindrical standard, A, the head, I, and the drill driving and feeding mechanism substantially as described, the standard, A, being provided with the screw, a', the jaws, B C, and their operative mechanism, or their equivalent.

68,828.—MECHANISM FOR SEWING OVAL SEAMS.—Agur Judson, Newark, N. J.

1st, I claim the combination with devices for stitching oval or elliptic forms of an apparatus for cutting the material into similar forms.

2d, The frame or bed piece, A, with its adjustable devices for describing ovals or ellipsis when so applied to a sewing machine table that it may present the fabric either to the needle or to the cutters.

3d, The revolving plate, r, constructed and operating substantially as described.

4th, The radially slotted disk, s, applied and operating as and for the purpose set forth.

5th, The combination of plate, r, and slotted disk, s, for joint action, substantially as set forth.

6th, The combination of the adjustable slide, V, with the disk, s, as and for the purpose set forth.

7th, The plate, B, provided with sockets for the reception of cork or other substance, for the purpose set forth.

8th, The combination of plate, B, constructed as described, with the top plate or piece, D, as and for the purrose set forth.

9th, The combination with frame, A, of a scale for indicating the size of the oval to be described.

10th, The combination with such frame of a scale for indicating the change in the form of the oval to be described.

REISSUES.

2,762.—KNIFE SHARPENER.—James Meyer, Jr., New York city. Patented May 14, 1867.

1st, I claim the cutting plates, E E', provided with longitudinal rounded edges, and connected together by a sliding joint, substantially in the manner as and for the purpose set forth.

2d, The combination of the handle, A, with the two pairs of cutters, E E', F F', the clamp at one end of the handle, and the recesses in the same to receive the cutters with or without the strap, C; substantially as and for the purpose specified.

3d, The cutters, E E', when placed in the same plane, and connected together by means of the sliding joint, or its equivalent, substantially as described, for the purpose specified.

2,763.—PUMP PISTON.—David S. Wood, Delaware, Wis. Patented July 10, 1866.

I claim the expansible loose packing, D, arranged on a piston which is provided with a channel wider and deeper than the packing for the reception of the same, substantially as and for the purpose herein shown and described.

2,764.—GATE.—Elijah Kemper, Thorn Township, Ohio. Patented June 24, 1862.

I claim a gate arranged so as to have both a sliding and swinging movement to open and close it, substantially as and for the purpose herein specified.

I also claim a gate so arranged that it may slide till it is supported centrally and then swing, balanced on its support, substantially as herein set forth.

I also claim, in combination with a sliding and swinging gate, a guide or guides, which shall serve both to direct the sliding of the gate and to support it for, and allow its swinging, substantially as herein specified.

I also claim the combination of a sliding latch with a sliding and swinging gate substantially as and for the purpose herein set forth.

DESIGNS.

2,775.—TRADE MARK.—Peter Behr, St. Louis, Mo.

2,776, 2,777, 2,778.—CLOCK CASE.—John H. Bellamy, Charlestown, Mass. Three patents.

2,779.—SPOON HANDLE.—James Bingham, Jr., Philadelphia, Pa.

2,780.—SPOON HANDLE.—Alonzo Hebbard, (assignor to Edward Corning and J. W. Dominick,) New York City.

2,781.—PARLOR STOVE.—Jasper Van Wormer and Michael McGarvey, Albany, N. Y.

PENDING APPLICATIONS FOR REISSUES.

Application has been made to the Commissioner of Patents for the Reissue of the following Patents, with new claims as subjoined. Parties who desire to oppose the grant of any of these reissues should immediately address MUNN & Co., *37 Park Row, N. Y.*

64,659.—FIRE-PROOF CEILING AND ROOF.—Joseph Gilbert, Philadelphia, Pa. Dated May 14, 1867. Application for reissue received and filed Aug. 29, 1867.

I claim, 1st, A ceiling composed of girders, corrugated plates, and socket bearers adapted to the said plates, and supported by the girders, all substantially as described.

2d, In combination with the above, I claim the bricks or blocks, X X, applied substantially in the manner and for the purpose described.

737.—HAND TRUCK.—P. H. Humes, Watson's Salt Creek, Ill., assignee of W. C. Rentgen, Keokuk, Iowa. Dated March 19, 1861. Application for reissue received and filed Sept. 2, 1867,

I claim the curved parts or ends, a a, of the truck, with or without the auxiliary wheels, b b, in combination with the curved adjustable holding and hop bar, D, one or more, substantially as and for the purpose set forth.

53,534.—CLEANSING ANIMAL CHARCOAL.—Philo S. Shelton, President of the Union Sugar Refining Company (assignee of Gustavus A. Jasper), Charlestown, Mass. Dated March 27, 1866. Application for reissue received and filed Aug. 30, 1867.

I claim as the invention of the said Jasper the new or improved process, substantially as hereinbefore described, for treating charcoal either after or before its use in a filter for the cleansing of a saccharine or other liquid, the same consisting in boiling the charcoal in an acid solution and washing it, the whole being essentially as specified.

I also claim as the invention of the said Jasper, for removal from the charcoal of the gummy and other matter except the lime or alkaline matter, the treatment or process of treating the charcoal without the use of acid, the same consisting in boiling the charcoal in water, or so boiling it and washing it, the charcoal being subsequently dried as set forth.

15,738.—MACHINE FOR CUTTING PAPER.—Hervey Law, Chatham, N. J. Dated Sept. 16, 1856. Reissue No. 2,670, dated July 9, 1867. Application for reissue received and filed Sept. 2, 1867.

I claim the combination of the rising and falling platform, C, and clamp frame, E, operating to clamp the paper or book as the platform rises, and to unclamp the same as the platform descends, by means of single or double cams or toggles, F F, having cranks, G G, connected with them, the pintles of which work in curved grooves or otherwise, actuated by any well known mechanical device, substantially as and for the purpose herein shown and described.

9,939.—SOCKET FOR AUGER HANDLES AND BRACES.—L. J. Gunn and C. H. Amidon, Greenfield, Mass., assignees of A. H. McKinley, Higginsport, Ohio. Dated Aug. 16, 1853. Application for reissue received and filed Sept. 2, 1867.

We claim as the invention of said McKinley, 1st, The employment in combination with the socket which holds the tool, of a movable cap or locking device which projects inwardly over the socket, and when the tool is inserted is made to close over the shoulders of the shank to retain it within the socket, and recede from said shoulders to enable the tool to be removed, substantially as described.

2d, Connecting that part of the cap or locking device that projects inwardly over the shoulders of the shank with the socket by means of a sleeve which surrounds the socket and is so secured thereto as to permit it to turn upon the socket to fasten and release the tool, and prevent the said locking device from being drawn from the socket, substantially as described.

3d, The combination of the detachable socket as described, with the auger handle or brace by which the tool is operated, substantially as described.

54,431.—HORSE HAY FORK.—Ariel B. Sprout, Picture Rocks, Pa. Dated May 1, 1866. Application for reissue received and filed Aug. 23, 1867.

I claim, 1st, Combining in one machine a hay elevator and hay cutter which will cut its way into the hay, and jut or turn out any part of said elevator or cutter for the purpose of catching, lifting, or elevating the hay, and then releases the hold of said jutting or turned-out part, for the purpose of discharging the hay and releasing the elevator and cutter.

2d, The bars, A and B, when pivoted at e, and used in combination with the levers, n and w, constructed, arranged, and operating substantially as herein described and for the purpose set forth.

9,387.—MODE OF THROWING SHUTTLES IN LOOMS.—Stephen C. Mendenhall, Richmond, Ind. Dated Nov. 9, 1852. Extended Nov. 9 1866. Application for reissue received and filed Sept. 4, 1867.

I claim, 1st, The combination of the picker spring, k, pickers, i i, inclined cams, j j, triggers, f f', cords, h h, treadles, 1, 2, 3, 4, and batten or lay, b, so that the forward motion of the batten shall set the pickers, and the backward motion of the batten shall release them alternately, by means of the cords and treadles, and thus drive the shuttle back and forth through the warp, substantially as and for the purpose set forth.

2d, I claim the picker spring, k, in combination with the pickers, i i.

3d, I claim the pickers, i i, in combination with the inclined cams, j j.

4th, I claim the pickers, i i, inclined cams, j j, in combination with the triggers, f f'.

5th, I claim the pickers, i i, in combination with the triggers, f f'.

6th, I claim the combination of the triggers, f f', cords, h h, and treadles, 1, 2, 3, 4.

7th, I claim the spring triggers, f f', in combination with the batten, B, when the same are used for retaining the pickers, i i.

8th, I claim alternately releasing the pickers, i i, when the same is effected by the regular successive depression of the treadles, 1, 2, 3, 4.

☞ NOTE.—*The above claims for Reissue are now pending before the Patent Office and will not be officially passed upon until the expiration of 30 days from the date of filing the application. All persons who desire to oppose the grant of any of these claims should make immediate application to* MUNN & CO., *Solicitors of Patents, 37 Park Row, N. Y.*

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[Condensed from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

2,098.—CARTRIDGE POUCHES OR CARRIERS.—Clarence Blake, Boston, Mass July 17, 1867.

2,196.—APPARATUS FOR BURNING PETROLEUM AND OTHER HYDROCARBON LIQUIDS FOR THE PRODUCTION OF HEAT AND LIGHT.—Simon Stevens, New York city.

2,213.—PROCESSES AND APPARATUS FOR THE MANUFACTURE OF SUGAR, AND FORMING THE SAME INTO CUBES FOR USE.—George Gordon, San Francisco, Cal. July 31, 1867.

2,216.—FIRE-ARM.—Azel S. Lyman, New York city. July 31, 1867.

2,242.—BRAKE FOR COTTON LAPPERS OR SCUTCHERS.—Richard Kitson, Lowell, Mass. Aug. 2, 1867.

2,252.—LOCKET AND MINIATURE CASE.—Wm. H. Halsey, Hoboken, N. J. Aug. 3, 1867.

2,256.—LAMP.—Wm. Porter, Belleville, N. J. Aug. 5, 1867.

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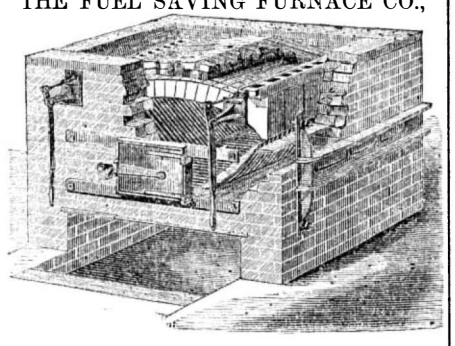

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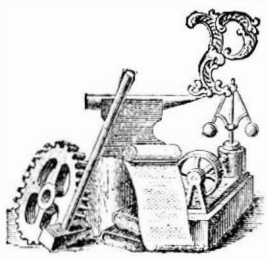

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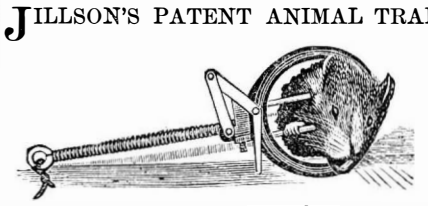

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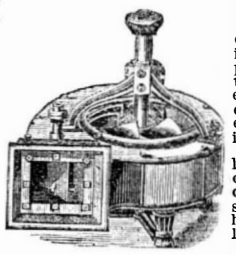

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